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## Original Communications.

### *PERICARDIAL EFFUSION: ITS DIAGNOSIS AND TREATMENT.*

BY H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College and Physician to Its Hospital.

However clearly the physical signs and symptoms of effusion into the pericardium or pleura may be described in the text-books, there probably does not exist a practitioner of experience who has not met with cases in which he felt grave doubt as to the presence of fluid. Further, there are few of large experience who have not found all the signs of pleural effusion present and then had their theoretical diagnosis brushed aside by the mortifying accident of having a "dry tap" when thoracentesis has been performed. Though the technical differences between the physical signs of pulmonary consolidation and pleural effusion, or cardiac dilatation and pericardial effusion, may be manifest in books, practical experience reveals that they are often misleading or so perverted as to be useless.

Of the question of pleural effusion nothing more need be said, but of that of pericardial effusion it is necessary to speak, first, because it probably occurs much oftener than it is diagnosed, and second, because it is

capable of jeopardizing the patient's life more speedily than a pleural effusion.

The occurrence of pericarditis is met with as a result or complication of acute rheumatism in about fifteen per cent of the cases in males and ten per cent in females. In this disease we are usually on the lookout for it, but in croupous pneumonia it is a much more frequent complication than is thought. We know that it is found in about twenty per cent of the cases which come to autopsy, and therefore it probably occurs with even greater frequency if the total number of cases is considered. It is a not infrequent complication of scarlet fever, and is met with as a result also of sepsis, tuberculosis, and even in chorea, in which disease Osler found it present in nineteen out of seventy-three autopsies. It also occurs in subacute or chronic maladies, notably in gout and Bright's disease, to such an extent that the French call it "*pericardite Brightique.*" When we recall the additional fact that it may occur in diabetes and as an extension process from pleuro-pneumonia, it is evident that it is a common condition. Of course, it is true that a very considerable portion of cases are not accompanied by effusion, but on the other hand it is the forms with effusion which are the most insidious, coming on without pain or other symptoms which would direct attention to the pericardium; and not until dyspnea, restlessness, and impaired circulation are manifested does the physician suspect pulmonary disease, or a pericardial effusion, and when he begins to diagnose its existence meets with contradictory signs and symptoms. It is true that we find as a rule distant heart sounds which are muffled and feeble, but such a condition of these sounds is met with in other states; that the apex beat is displaced, but so it is in pleural effusions and in chronic adhesive states following plastic or mediastino-pericarditis; that the area of cardiac dulness on percussion is deformed or enlarged, particularly to the right, but here again a very similar condition is met with in cardiac dilatation.

What, then, are the symptoms which may be considered pathognomonic? I doubt if there are any, and believe that we must rely upon the history of the case, the general symptoms, and the physical signs combined, plus experience.

Rotch has claimed that dulness on percussion in the fifth right intercostal space indicates fluid in the pericardium, but I have seen cases in which no fluid was present and in which dulness existed in this area; and this has been well pointed out by Broadbent, Lees, and Ewart, who have found that the dilatation of the heart accompanying rheumatism in children often gives this sign.

When are we to be suspicious, then, of this insidious and dreaded state? In the first place it should be recalled as a possibility in all of the diseases we have named when dyspnea and respiratory, plus cardiac, distress are manifest, and the very fact that these symptoms may arise in Bright's disease as the result of uremia as well as effusion should not be overlooked.

The diagnosis should, I think, be made certain by the insertion into the fifth right intercostal space of a long fine hypodermic needle carefully sterilized and already attached to a sterile syringe, with which some suction may be made if need be. The needle should be pushed in gently and directed anteroposteriorly, and as it enters the chest the syringe should be held very lightly between the forefinger and thumb so that it is as if balanced. If by any accident the heart is punctured even by the tip of the needle, the motion of the syringe at once reveals this fact and it can be withdrawn far enough to escape the heart wall. In other words, this is a single exploratory puncture, and while it deals with a part or organ which is supposed to be vital and vulnerable to a high degree, it is I think justifiable, first, because if the patient's symptoms are pressing he is in great danger from his effusion; second, because if the fluid is withdrawn his life may be saved; and third, because notwithstanding the fear of an injury of the heart being fatal, as a matter of fact it is an organ which permits the most extraordinary pathological changes without losing its function, and receives insults better than some other organs, like the liver and kidney. As a matter of fact death after a puncture of the heart results as a rule from the same causes as death due to a stab of a large artery, namely, in the sense of great loss of blood, or more commonly by the outpouring into the pericardium of blood which, while it is not sufficient to cause death by direct loss of blood, so presses on the heart that its action is arrested. Only when the coordinating center of Kronecker is punctured does death ensue, and as this can only be found after careful search with a sharp instrument when sought for in the bared heart, and as the septum is far removed from the area suggested for puncture, this accident could scarcely occur.

Experimental evidence and records of cases can be adduced in abundance in support of these assertions, and I have recently collected some of these facts in the THERAPEUTIC GAZETTE for 1898.

This exploratory puncture not only informs us of the presence of fluid, but of the position of the heart if any part is in the line of the operation. Sometimes the abstraction of small amounts of fluid will give relief, but if not, then a more competent aspirating apparatus can be used, such as is commonly employed in the operation of thoracentesis.

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## *THE NON-OPERATIVE TREATMENT OF SUPRAPUBIC VESICAL FISTULÆ, ILLUSTRATED BY A CASE COMPLICATED BY A COMMUNICATING PELVIC ABSCESS.*

BY CHARLES LESTER LEONARD, A.M., M.D.,
Assistant Instructor in Clinical Surgery and Instructor in Skiagraphy, University of Pennsylvania; Surgeon to the Southern Dispensary, etc.

Surgical teachings must always be understood to include the employment of antiseptic or aseptic methods. The effect of antisepsis will be noted in the difference in the results obtained in the following case:

Three months before she came under my care Mrs. G. had been operated on for a pelvic abscess. By some mischance the bladder had been opened and a suprapubic fistula had formed, through which both urine and pus were discharged, while there had been a continuous interchange of infection between the abscess, the bladder, and the surrounding pelvic cellular tissue.

The only treatment the patient had received before I saw her had apparently been based on the known tendency of such fistulæ to close spontaneously, but little had been attempted in antisepsis, and as a consequence the patient grew worse. Her general condition was very poor, while the condition of the perivesicular connective tissue resulting from the protracted infection can be imagined. The profoundly depressed condition of the patient and the extent of the infection, with the probability of renal involvement, made it seem desirable to defer operation until the patient's physical condition could be improved. She was therefore removed to a private hospital ward, where strict antisepsis could be maintained.

The first indication in the treatment was the prevention of any further interchange of infection between the bladder and abscess cavities.

Suprapubic siphon drainage was secured for the bladder in the following manner: A fine rubber drainage tube was threaded upon a silk ligature attached to an eyed probe. After the probe had been passed through the sinus into the bladder, and while it was held by the attached ligature, the drainage tube was slipped over it into the bladder. A suitably connected tube conducted the urine into a receptacle beneath the bed. Drainage tubes were passed into the abscess cavity and sinuses in a similar manner. A wall of granulation speedily formed between these various tubes and effectually prevented any further intercommunication.

The marked cystitis was treated by irrigating with hot boric acid solutions, and as soon as inflammation of the external genitalia, which had resulted from the continual flow of pus over that region, had subsided a catheter was passed and through-and-through irrigation was used daily. The urine was also sterilized and rendered acid by the administration of benzoic acid as employed by Emmet in the following formula:

℞ Acid. benzoici, ʒ ij;
Acid. borici, ʒ iij;
Aqua dest., f ʒ xij.

Misce. Sig.: One tablespoonful well diluted three or four times daily.

The general pelvic tenderness was rapidly decreased by the external application of a fifty-per-cent ichthyol ointment and the same drug used in vaginal suppositories.

The greatest difficulty experienced was in the treatment of the abscess, as antiseptics had to be employed that would not irritate the bladder, while it was impossible to get good drainage. The complete emptying of the abscess cavity and thorough antisepsis were secured by the employment of the official boroglyceride, which while acting as a non-irritant antiseptic also acted by its greater specific gravity, causing the displacement and expulsion of all the pus.

Although the progress towards recovery was at first slow, the combined local and constitutional treatment enabled the patient to make such progress that operation was again postponed.

As soon as the urine became normal and the sinuses ceased to discharge pus, the suprapubic drainage was removed and catheterization at regular intervals substituted. The drainage tubes in the sinus leading to the abscess cavity were not removed till the

urinary fistula had healed. This occurred promptly after the removal of the siphon drainage. The sinuses leading to the abscess cavity were then allowed to heal; their healing, however, did not take place as rapidly.

In all the sinuses the first drainage tubes introduced were necessarily small, but each gradually dilated the sinus in which it lay, when a larger one was introduced in the manner described.

The continued good health of the patient (now over two years) and the knowledge of the condition probably produced by the numerous pelvic adhesions have deterred the author from further operative interference, which unless new indications arise seems hardly justifiable.

The case is of interest as a demonstration of the relief that proper antiseptic measures can afford in cases where suppurative disease has so depressed the system and devitalized the tissues that operative interference is hazardous and inopportune. It also illustrates the fact that conservative antiseptic surgery, in certain instances, is capable of assisting Nature to accomplish cures where radical operation would certainly be attended by failure; and further, that asepsis or antisepsis is essential to the spontaneous closure of suprapubic vesical fistulæ.

1930 Chestnut Street.

## *THE INHIBITORY INFLUENCE OF FREE OXYGEN ON THE GROWTH AND MULTIPLICATION OF TUBERCLE BACILLI; AND THE TREATMENT OF TUBERCULOSIS WITH THE SYRUP OF IRON CHLORIDE—AN EXPERIMENTAL STUDY.*

By George W. Weld, M.D.,
New York.

In treating the various forms of anemia at the Bellevue Hospital Dispensary in the spring and summer of 1892 I succeeded in obtaining, in a period covering four months' time, twenty-five cases. These cases embraced: (1) simple anemia, or where both the corpuscles and hemoglobin are diminished; (2) chlorosis, or where the corpuscles are normal and the hemoglobin diminished.

The result was the usual increase of corpuscles and hemoglobin in the blood and a distinct improvement in the general health of each individual patient.

Attention is specially directed, however, to only one of the above cases, viz., a case of anemia with phthisis, in which the treatment consisted in the administration of the syrup of iron chloride in large quantities, with no other treatment except a proper consideration for the digestive tract.

The case referred to is as follows:

April 29, 1892. L. O., female; American; aged twenty; hemoglobinometer registered 32. Anemia pronounced. Sputum shows tubercle bacilli. Physical examination reveals dulness on percussion over left lobe, associated with crepitant râles, bronchial voice, and high-pitched respiration. Ordered syrup iron chloride, half an ounce three times a day.

May 13. No apparent improvement; complains of pain in chest, and slight constipation. Ordered cascara sagrada, and increased iron to one ounce three times daily.

May 18. Appearance somewhat improved, but complains of pain in the chest. Iron increased to one and one-half ounces three times a day.

June 1. Patient feels stronger; no constipation nor irritation of the stomach. Hemoglobinometer registers 48, an increase of 18 points in thirty-three days.

June 15. Hemoglobinometer registers 55; patient feels better; appetite improved. The iron was now increased to two ounces three times a day.

July 8. Appearance very much improved; complexion good. Complains of cough, which is attributed to cold contracted on rainy day. Hemoglobinometer registers 68. Iron increased to 2½ ounces three times a day.

July 20. Hemoglobinometer registers 70. Weather hot and sultry. The patient has gained in weight 7½ pounds since April 30. Sputum reveals bacilli, but scattering and diminished in number.

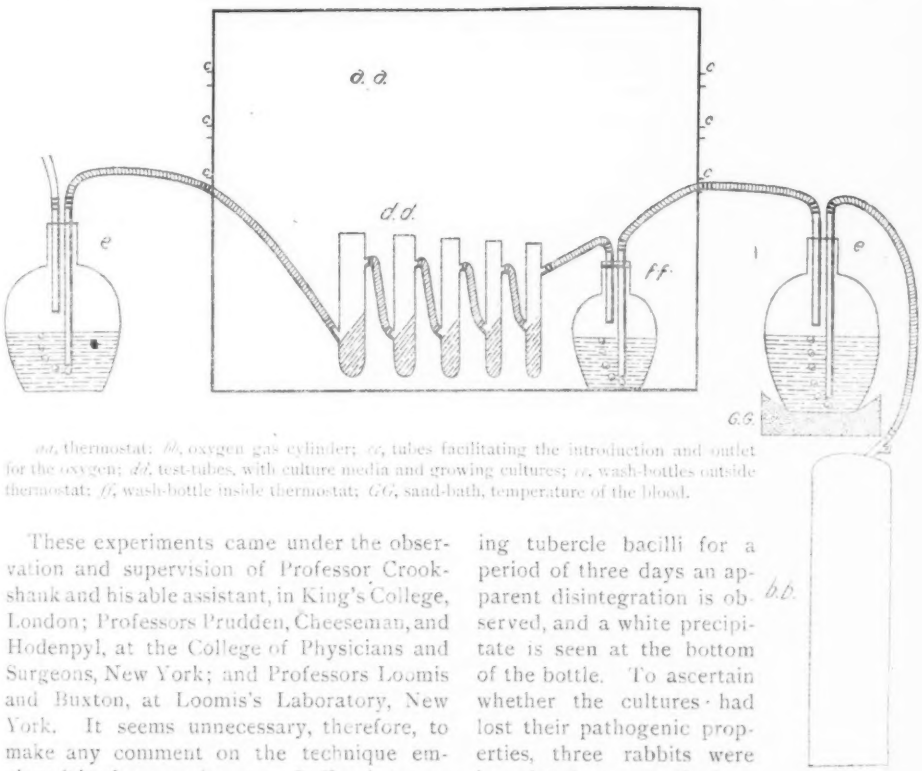
July 29, nine days after, I sailed for Europe and was absent for a period of six months. I have never seen the patient since.

What caused the improvement in this particular case? The woman's environment was anything but favorable, and such that hygienic measures were out of the question. Did the ingestion of the iron stimulate nutrition and assimilation, or check tissue waste or promote tissue repairs? Did the increase of the red blood-corpuscles and the hemoglobin excite intraorganic oxidation and fortify the lung tissue against the onslaught of the tubercle bacilli?

These thoughts led me to experiment to ascertain, if possible, what the action of free oxygen might be on a growing culture of tubercle bacilli in the laboratory. To this

end I had manufactured a special thermostat which presented on each side a series of tubes for the purpose of introducing and getting rid of the oxygen gas. This, with wash-bottles, and a series of test-tubes of original design, completed the outfit.

The accompanying diagram will show how the experiments were conducted.




*a.a*, thermostat; *b*, oxygen gas cylinder; *c.c*, tubes facilitating the introduction and outlet for the oxygen; *d.d*, test-tubes, with culture media and growing cultures; *e.e*, wash-bottles outside thermostat; *f.f*, wash-bottle inside thermostat; *G.G*, sand-bath, temperature of the blood.

These experiments came under the observation and supervision of Professor Crookshank and his able assistant, in King's College, London; Professors Prudden, Cheeseman, and Hodenpyl, at the College of Physicians and Surgeons, New York; and Professors Loomis and Buxton, at Loomis's Laboratory, New York. It seems unnecessary, therefore, to make any comment on the technique employed in the experiments. Suffice it to say that everything was done that was suggested by these eminent gentlemen to render the experiments free from error; and I take this occasion to thank them for their assistance and courtesy and painstaking efforts to render the experiments accurate.

The following is a *résumé* of the experiments as conducted at King's College:

*Series A.*—Five test-tubes containing nutrient media (agar-agar glycerin) inoculated with virulent tubercle bacilli November 22, 1892. A slow current of warm oxygen gas was allowed to pass over the same for a period of twenty days.

In each tube the growth of the culture was completely retarded; the consistency of the cultures appeared to be somewhat mealy, differing from normal cultures, and they did not appear to adhere to the surface of the nutrient media; the color was changed to a reddish brown. Other nutrient media inoculated with these cultures did not take. The culture under the microscope showed that the organism was not destroyed, but was found less difficult to stain.

When a slow current of warm oxygen gas is passed through a bottle containing growing tubercle bacilli for a period of three days an apparent disintegration is observed, and a white precipitate is seen at the bottom of the bottle. To ascertain whether the cultures had lost their pathogenic properties, three rabbits were inoculated; none of them showed any symptoms of tuberculosis.

Similar experiments were made at the College of Physicians and Surgeons, New York.

Five tubes containing nutrient media were inoculated with tubercle bacilli April 28, 1893, and submitted each day to a slow current of warm oxygen. The tubes were placed in the thermostat April 28, and oxygen applied May 2, four days later, for a period of twenty-four hours, and on May 5 for thirty minutes; May 6, one hour and fifteen minutes; May 8, one hour and forty-five minutes; May 9, one hour and fifteen minutes; May 11, two hours; May 12, three hours; May 13, two hours; May 17, thirty minutes; May 20, two hours; May 22, two hours; May 23, two hours; May 24, two hours; May 25, two hours. Covering a period of thirty days the tubercle bacilli were

under the influence of the gas forty-six hours and fifteen minutes, or an average of about an hour and a half each day. The appearance of the tubercle, regarding both color and consistency, was similar to the bacilli submitted to a continual current of oxygen for a period of twenty days.

The experiments seemed to show that while tubercle bacilli are aerobic, an excess of oxygen inhibits their growth and multiplication. The question arises, then, what is the exact relation of oxygen, and in what proportion to the proper nutrition and development of this organism? To what degree is an excess of the gas germicidal? To what extent does it inhibit their growth; and how much, if any, does it decrease their virulence?

The following experiments were made at the Loomis Laboratory, New York:

Nutrient media were inoculated with tubercle bacilli February 13, 1896. Oxygen (four tubes) started February 28. Common air (four tubes) started February 28. Control (three tubes), *i.e.*, normal conditions for growth.

February 28, oxygen applied 30 minutes, common air 30 minutes; March 5, oxygen 40 minutes, common air 40 minutes; March 7, oxygen 45 minutes, common air 45 minutes; March 9, oxygen 1 hour and 15 minutes, common air 1 hour and 15 minutes; March 12, oxygen 1 hour and 15 minutes, common air 1 hour and 15 minutes; March 13, oxygen 60 minutes, common air 60 minutes; March 17, oxygen 60 minutes, common air 60 minutes; March 19, oxygen 60 minutes, common air 60 minutes; March 22, oxygen 60 minutes, common air 60 minutes; March 25, oxygen 1 hour 30 minutes, common air 1 hour 30 minutes; March 28, oxygen 60 minutes, common air 60 minutes. Total, 64 days in thermostat; subjected to influence of oxygen gas 34 days 695 minutes, or daily average of about 20 minutes.

Admitting that free oxygen and ozone destroy the tubercle, what practical value have the experiments in connection with the treatment and cure of the terrible disease—tuberculosis? With our present knowledge of the disease, probably no value whatever.

One of the most prominent specialists of lung diseases in New York, Dr. Chas. E. Quimby, recently made a statement to the effect that he seldom came across a patient suffering with the disease who was not susceptible to improvement. Dr. Quimby divides tuberculosis into two conditions: (1) the tubercle; (2) the septic condition.

The *tubercle*, or rather the millions of tubercle bacilli which cause the destruction of lung tissue, and the *septic condition* are so securely encased in healthy tissue as to be apparently protected from the influence of any germicidal agent. In fact, the opinion has been expressed by one authority that if the blood could be impregnated with an antiseptic up to nearly the point of corpuscular ruin it would probably flow through the lungs without causing the death of one bacillus.

The "second condition" of the disease would appear, then, to be the only condition that admits of any rational treatment.

The ingestion of iron oftentimes increases the desire for food and the ability to dispose of it, and serves as a permanent tonic. In the case which I have mentioned the patient gained 7½ pounds in weight and 28 points in hemoglobin from April 29 to July 20, or a period of eighty-two days. The corpuscles in this case were not counted, but it is fair to presume their number was largely increased. The quantity of iron the patient was taking when she paid her last visit was 2½ ounces three times a day, or 250 minims of the tincture of the chloride of iron of the U. S. Pharmacopœia.

There are so many preparations of iron on the market that it is difficult to say which one possesses the greatest merit. The preparation mentioned, viz , the syrup of iron chloride,* is the old-fashioned tincture of the iron chloride slightly modified, each ounce of which contains forty minims. It is easily borne by weak stomachs and can be taken in large quantities without deranging the *digestive* tract—a great advantage over many other preparations. The form of iron that is to be employed, however, to improve nutrition, increase the hemoglobin and the red corpuscles, must be left of course to the judgment of the attending physician.

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## *REPORT OF 78 CASES OF PULMONARY TUBERCULOSIS TREATED AT THE WINYAH SANITARIUM, AT ASHEVILLE, N. C., IN 1898, WITH WATERY EXTRACT OF TUBERCLE BACILLI.*

By Karl Von Ruck, M.D.

In making the following report I wish in the first place to disclaim any possible impression that the results recorded are attributed by me entirely to the specific remedy

*Syrup iron chloride, Parke, Davis & Co.

employed, inasmuch as I appear to have been misunderstood by some authors, who in referring to my previous report of 182 cases,* suggested that the favorable climate of Asheville, and other advantages which my patients were afforded, have no doubt also had their equal influence in obtaining my results.

Had my reviewers read my report carefully, they would have found the following sentence immediately below the summary of the results: "This report is, however, not made with a view of convincing my hearers of the great value of one particular remedy employed, and I am fully aware that a variety of favorable influences has contributed to these results."

I am in exactly the same position at this time, having never been willing to do anything but the best that I felt capable of in the management and treatment of my patients, and in the treatment of the present series the climatic treatment, the dietetic, hygienic and hydropathic measures, the institution management and control of the patients, the use of the pneumatic cabinet, of inhalations and symptomatic medicinal treatment, were all deemed essential and were employed as required, while the specific medication was administered.

If, however, we wish to show the influence of the specific remedy (in the present instance of the Watery Extract of Tubercle Bacilli) we can perhaps do this with sufficient accuracy for all practical purposes by examining the results obtained in this and in other institutions, without the use of specific germ products, and which show apparent recoveries in from ten to twenty per cent only; the difference in the percentage depending no doubt upon the stages in which the cases came under treatment, and also upon the fact that many patients leave off their efforts to get well, when they are only more or less improved, hoping that no further relapse will thereafter occur.

Many such unfinished cases necessarily enter into reports from institutions, and in all my series, with and without specific treatment, still better results would, no doubt, have been shown, had the improved and greatly improved cases remained long enough under treatment to accomplish the best attainable results.

The evolution of specific medication for infectious diseases has made enough progress, at this time, to justify the serious and thoughtful attention of medical men, and supplies a most interesting and gratifying chapter in the history of medicine of the closing century.

In tuberculosis this is only less apparent to those who lose sight of the limitations that all remedies must have in their power of removing pathological processes, which frequently attain a degree from which recovery or even improvement is absolutely impossible.

The pathological changes of tubercle are no exception to this general truth, as we recognize it, for instance, in syphilis, where stages are often reached in which specific medication is absolutely useless.

During the life of the patient it may be difficult and at times impossible to determine the exact pathological changes present, and so it comes that in practical medicine we often attempt the accomplishment of that which a full knowledge of the true pathology in the particular case would show us to be useless.

The use of bacterial products as specific remedies for tuberculosis had its origin with Koch's Tuberculin in 1890, and all the modifications which have since been brought forward were derived from the fluid upon which the specific germs had been grown.

It was believed that in this fluid certain proteid substances resulting from the tubercle bacilli, either as secretions or excretions, or both, were accumulated, and that the peculiar influence of this fluid depended upon these accumulated proteids.

In the meanwhile it was suggested that the tubercle bacilli must necessarily contain this principle within their bodies, but all efforts for its extraction proved signal failures.

To test this assumption, dead tubercle bacilli were used in animal experiments, but the regular formation of abscess at the point of injection, and the occasional occurrence of spurious tubercles in the body of the experiment animal, showed plainly that this method of treatment could not be made use of in the human subject, though the animal experiments gave indication that the germs did contain the curative substances desired.

In the further efforts to obtain this curative substance directly from the tubercle bacilli, various methods were resorted to, especially by Professor Koch, who, in April, 1897, announced his "Tuberculin R," with which he believed the desired object had been attained.

This product, however, has since been found to be an emulsion of fragments and

*THERAPEUTIC GAZETTE, May, 1896.

of whole tubercle bacilli, which, when the remedy is filtered through porcelain, remain upon the filter; and it has been further shown that with this residue virulent infection can be produced.

The fact that the curative substances could not pass through a porcelain filter was acknowledged by Koch in his paper, and should have been sufficient to establish that a true solution of the germs was not present. The subsequent withdrawal of "Tuberculin R" by the manufacturers was undoubtedly on this account.

In my own efforts to obtain the desired solution, I succeeded, in February, 1896, by the method heretofore published,* and which I may again describe for the benefit of those to whom my previous publication is not accessible:

"The tubercle bacilli are filtered out of the rapidly growing and highly virulent culture. After washing with distilled water for the removal of the remains of the culture fluid, they are dried in a vacuum desiccator. Next they are powdered in an agate mortar and then extracted with sulphuric ether. This extraction removes the fats. They are again dried and powdered as before, and their further extraction takes place in sterilized distilled water over a warm bath with a temperature of 120° F. The proteids becoming dissolved in the distilled water, the fluid is then decanted and filtered through porcelain, when finally the amount of proteids is determined and the preparation standardized to a certain per cent."

Reasoning backward, and recognizing that all the various tuberculin preparations have shown a certain degree of clinical value, it seems quite probable that proteids of tubercle bacilli entered into all of them during the growth of the culture, and also into some of them during the process of manufacture.

The amount of proteids was undoubtedly small and variable, and was associated with the organic substances from the culture fluid.

The Watery Extract as produced by me, and into which absolutely no culture fluid enters, is free from organic substance and other impurities. It is a perfectly pure solution of the germs only, and being filtered through porcelain is absolutely free from any germs or fragments thereof.

For its preservation a fraction of a per cent of phenol is added, which in no wise alters its clinical value.

*THERAPEUTIC GAZETTE, June, 1897.

For convenience of administration and to avoid mistakes in making dilutions, we prepare three different strengths of the solution: No. 1 (white label) contains $\frac{1}{100}$ of one per cent of the solid extract, free from water; No. 10 (yellow label) contains one-tenth of one per cent; and No. 100 (red label) contains one per cent of the extract.

The treatment of cases is begun with No. 1 (white label), and the initial dose is one-tenth of one cubic centimeter, or $\frac{1}{1000}$ of a milligramme of the anhydrous extract. From this dose we increase daily by one-tenth of a cubic centimeter, so that on the second day we give two-tenths cubic centimeter, the third day three-tenths, the fourth day four-tenths, and the fifth day five-tenths of one cubic centimeter. The latter dose equals $\frac{1}{500}$ of a milligramme of extract.

I usually repeat five-tenths of a cubic centimeter of No. 1 several times, and then I again increase by tenths, until the daily dose is one cubic centimeter. From now on it is more convenient to use solution No. 10 (yellow label), one-tenth of a cubic centimeter being equal to one cubic centimeter of No. 1.

Repeating each dose once or twice we increase by tenths or twentieths of a cubic centimeter until half of a cubic centimeter of No. 10 is given as the daily dose. I find that this dose is quite active—*i.e.*, it shows an unmistakable influence over tubercular processes—therefore the further increase can be more gradual, and as the doses become still larger the intervals between the injections are first increased to thirty-six hours and later to forty-eight hours.

The further increase of one-tenth cubic centimeter every second dose can be made with the same solution, or we can now use solution No. 100 (red label), of which one-tenth cubic centimeter is equal to one cubic centimeter of No. 10, or to ten cubic centimeters of No. 1.

It is, of course, a matter of choice with those who wish to use this preparation to make their own dilutions, either from No. 10 or No. 100, but as the doses are increased the solutions No. 10 and No. 100 are desirable, to obviate the necessity of bulky injections.

Koch, presuming that he had a true solution, stated at the close of his paper that it was the end of possible improvement of specific remedies for tuberculosis and that nothing better could be produced. However this may be, I can confirm his successful animal

experiments alike by the use of "Tuberculin R" and by the use of my Watery Extract of Tubercle Bacilli, in the actual cure of guinea-pigs, as well as in the obtaining of a considerable degree of immunity; that is to say, animals protected with the Watery Extract of Tubercle Bacilli and with like doses of Koch's "Tuberculin R" proved refractory to virulent infection, while the control animals developed the disease and died.

In the same paper in which Professor Koch announced his new tuberculin, he also gave the suggestion of producing a serum of possible value by immunization of animals with that preparation.

This was undertaken in my laboratory immediately, and on the 3d of May, 1897, the immunization of four goats was commenced. The immunization was continued in two of the animals until October, and in the remaining two until November. Two animals received Koch's "Tuberculin R," from one to seventy cubic centimeters daily, and two received like doses of my Watery Extract of Tubercle Bacilli for the same length of time.

With the serum, taken at different stages of immunization from these animals and at various periods after the supposed immunization was completed, we endeavored to protect guinea-pigs against infection, and to treat them after infection. In the method for protection we followed that of Fisch, who in October, 1897, claimed satisfactory results from his serum made by using "Tuberculin R." All these animals developed and eventually died of tuberculosis, and no appreciable result was obtained in immunization or treatment.

My results being so strikingly at variance with those of Dr. Fisch, though carried out with the greatest of care, I repeated the experiments; this time, however, with the serum made by Dr. Fisch himself, and purchased from his laboratory.

On April 5, 1898, the method of protective treatment as published by Dr. Fisch was begun with animals Nos. 305, 306, 307, 308, 309, 310, and 311, and continued for one month, when they were all infected by implantation of tissue from a fresh tubercular spleen. In addition, we infected for control animals Nos. 312, 313, 314, and 315.

The injections of Fisch's serum were continued in Nos. 309, 310, and 311, all with the following results:

Animal No. 305, protected with Fisch's serum: Original weight 765 grammes, at death 512 grammes; died August 22. Post-mortem showed point of infection a caseous mass, with perforated skin; glands enlarged, mostly caseous; spleen and liver enlarged, full of small tubercles; few tubercles in lungs; extensive pneumonic consolidation. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 306, protected with Fisch's serum: Original weight 500 grammes, at death 412 grammes; killed September 16. Post-mortem: point of infection a caseous mass, skin perforated. Lungs showed few tubercles, many in spleen and liver; glands caseous. Microscopical: many tubercle bacilli in all tissues examined.

Animal No. 307, protected with Fisch's serum: Original weight 490 grammes, at death 405 grammes; killed September 16. Post-mortem: point of infection a caseous mass, ulcerated; glands enlarged, many caseous and soft; liver, spleen, and lungs full of tubercles, some of them caseous. Microscopical: many tubercle bacilli in all the tissues examined.

Animal No. 308, protected with Fisch's serum: Original weight 500 grammes, at death 440 grammes; killed September 16. Post-mortem: point of infection caseous; glands enlarged, some caseous and soft, others fibroid; liver and spleen enlarged, and contained caseous and fibroid tubercles; adrenals tubercular. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 309, protected with Fisch's serum and subsequently treated with the same in doses of 0.3 to 0.5 cubic centimeter every other day until death: Original weight 516 grammes, at death 410 grammes; killed September 16. Post-mortem: point of infection, caseous mass and open ulcer; few tubercles in peritoneum; liver and spleen greatly enlarged and full of tubercles; many tubercles in lungs. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 310, protected and treated same as No. 309: Original weight 470 grammes, at death 440 grammes; killed September 16. Post-mortem: point of infection, fibroid tubercle; glands enlarged, few caseous, most of them fibroid; liver and spleen greatly enlarged, full of miliary tubercles; lungs tubercular. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 311, protected and treated same as Nos. 309 and 310: Original weight 500 grammes, at death 430 grammes; killed September 16. Post-mortem: point of infection, caseous ulcer; glands enlarged, fibroid

and caseous; liver and spleen enlarged, full of tubercles; lungs slightly tubercular, several caseous masses. Microscopical: many tubercle bacilli in all tissues examined.

Animal No. 312, control, infected (but not protected or treated): Original weight 520 grammes, at death 460 grammes; killed September 15. Post-mortem: point of infection caseous; few tubercles in peritoneal adhesions; glands enlarged, many of them caseous; liver and spleen enlarged, and contained many miliary tubercles; few isolated tubercles in lungs. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 313, control: Original weight 620 grammes, at death 580 grammes; killed September 15. Post-mortem: point of infection caseous, surrounded by recent tubercles; most glands fibroid; liver and spleen greatly enlarged, full of miliary and a few caseous tubercles; numerous tubercles in lungs; adrenals enlarged, tubercular. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 314, control: Original weight 570 grammes, at death 550 grammes; killed September 15. Post-mortem: point of infection, hard indurated mass; glands enlarged, most of them fibroid, few caseous; liver and spleen enlarged, full of tubercles; lung, few fibroid nodules. Microscopical: tubercle bacilli in all tissues examined.

Animal No. 315, control: Original weight 510 grammes, at death 460 grammes; killed September 15. Post-mortem: point of infection, caseous mass; glands enlarged, some hard, some caseous and soft; liver, few small tubercles; spleen enlarged, and contained many miliary tubercles; lungs, few fibroid tubercles; adrenals enlarged, caseous. Microscopical: tubercle bacilli found in all tissues examined.

Animal No. 316, control: Original weight 470 grammes, at death 420 grammes; killed September 15. Post-mortem: point of infection caseous; glands enlarged and hard; liver greatly enlarged, and contained large caseous tubercles; spleen enlarged, many small tubercles; lungs, few caseous tubercles. Microscopical: tubercle bacilli in all tissues examined.

These results are entirely in conformity with those from the use of my goat serum, and I presume that Dr. Fisch killed his animals entirely too soon — namely, a month after infection, a period ordinarily insufficient for the development and recognition of tubercle.

I have previously published* some of my experimental work with Watery Extract of Tubercle Bacilli, and with other products derived from the culture fluid upon which tubercle bacilli had been grown.

More recently I have made another series of experiments with watery extract of tubercle bacilli, and with Koch's "Tuberculin R," which, though not entirely completed, appear to confirm my previous statement that these preparations are curative as well as protective.

Clinically, I have had the aid of several colleagues in endeavoring to find the best method of dosage, selection of cases, etc., and I am especially indebted to Dr. Charles Denison of Denver, and also to Dr. J. Longstreet Taylor of St. Paul, and Dr. John H. Williams of Asheville, for valuable assistance, they also having obtained valuable results from my preparation.†

In the study of the effect of the remedy I have found that it is also capable of producing reactions in the local tubercular area, which can be readily observed with the eye in tubercular infiltration in the larynx.

In the lungs also we note evidence of congestion in tubercular localities, and particularly in the outlying areas where more recent tubercles are present. Singularly, and contrary to the experience with crude tuberculin and its modifications, these local reactions are not usually accompanied with fever; on the contrary the temperature is frequently lower than before.

I have elsewhere‡ recorded my experience, which I believe justifies me in saying that any proteid injected subcutaneously in sensible quantities is liable to produce fever. Blood-serum, solutions of egg-albumen, beef extract, beef peptone, and nuclein, all produce a rise of temperature after their hypodermic injection, and to all of these toleration can be established by beginning with small quantities, which when thereafter gradually increased even to very large doses do not disturb the temperature.

These substances have, however, no visible or apparent effect upon tubercular tissues,

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* *Cincinnati Lancet-Clinic*, Feb. 8, 1898.

† Dr. Williams kindly put at my disposal the clinical data of twelve cases treated by him with my Watery Extract and discharged during the past year. They comprise seven early stage cases, all of which were discharged as cured; three more advanced stage cases, one of which was discharged cured, and two cases greatly improved; two cases in the third stage, of which one was cured, and one case (treated only three weeks) grew worse.

‡ *New Orleans Medical Journal*, July, 1898.

whether fever follows their injection or not —that is to say, we do not note the selective influence by which only tubercular tissues become injected and turgescent. On the contrary, all we observe is the fever, with its general disturbance of the well-being of the patient.

For the production of fever with the various organic substances mentioned, much larger quantities than the amount contained in the maximum dose of the Watery Extract are necessary, and the non-occurrence of fever reactions from Watery Extract to doses of from $\frac{1}{1000}$ to three or four milligrammes of organic substance may, perhaps, be thus explained.

In all my cases I have so gradually increased my doses that I have seen no unduly prolonged local effect, and I believe that such gradual increase is for the present the best and safest method of procedure. When a distinct local effect is produced, as evidenced by the temporary local congestion of the tubercular locality, I allow this to subside before I give another dose, which is usually the case in twenty-four to thirty-six hours. When the effect is unduly prolonged I reduce the next dose, and when no effect is produced I increase the dose.

Many physicians will of course be unable to observe and watch these local effects for a variety of reasons, and in such instances a very gradual and conservative increase is the best and safest course to pursue. A number of colleagues to whom I have supplied the remedy within the last eighteen months have been so circumstanced that no control as to reactions was possible, but they have obtained excellent results, nevertheless, though the treatment was somewhat prolonged.

From the reports that have reached me from such colleagues and from my own observation, I believe I am entirely safe in saying that if the increase is slow enough so that not more than 0.3 cubic centimeter of No. 10 solution is reached the first month, and the gradual additions to this dose do not exceed 0.5 cubic centimeter in subsequent months, no fear of undue reactions need be entertained, and the result will prove entirely satisfactory.

How satisfactory this may be, and how much visible improvement may be noted, will depend upon the pathological changes present, and also upon the additional care and treatment the patient receives. The latter will be more a factor the more advanced the case may be in destructive process, suppuration, and softening in caseous localities, and in complications. In such cases the cough, fever, heart action, diet, and general conduct of the patient need careful attention and supervision.

I shall be glad at all times to supply as far as I have them reprints of articles on these and other subjects, in which I have recorded my experience.

It is chiefly in early and middle-stage cases, free from absorption fever, with a fair degree of nutrition, and free from serious complications, that I have obtained my best results, and I would urge those who desire to use the remedy under consideration to select only such cases, at least for a beginning.

In the observation of the involved lung portions and other tubercular localities, while the treatment is administered, I have rarely failed to note unmistakable changes for the better within the first month or six weeks, particularly in recent extensions to adjacent lung portions and to the opposite lung, and in recent infiltrations of the larynx.

Removable tubercles in the lung do not, however, as a rule reveal their presence by a dull percussion note unless the alveoli and bronchioles are entirely obstructed by their presence; nor do such tubercular deposits ordinarily cause bronchial respiration, much less coarse râles and rhonchi. On the contrary, the changes induced by purely tubercular deposits, especially when of recent origin, are delicate, and cause scarcely perceptible or but slight changes on percussion, while auscultation shows a weak, feeble respiratory murmur, which may be more or less rough on inspiration, when we also may note very fine crepitation. Later, after some months, the reactionary inflammatory changes in tissues, where tubercle has been formed, cause increase of connective tissue, and now the percussion changes become more marked while the respiration may become harsh and bronchial.

Many practitioners who are not in constant practice may have difficulty in making out these delicate changes, and if they fail to recognize them when the patient comes under treatment they will of course not note their disappearance later on. However this may be, they should not expect that the physical symptoms due to fibroid changes, caseous pneumonia, thickened pleura, and such like, will clear up and disappear under the use of this remedy, and if they cannot recognize the less pronounced changes they must be content to note the more general improvement

which always follows, unless in badly selected cases in which the irremediable conditions control the clinical course entirely.

Most cases coming under my care, even in advanced stages, present more or less recent extension of the tubercular disease in the lungs, which are destined to follow a like, but as a rule a more rapid and less favorable, course than the earlier deposits have done.

It is not a matter of indifference whether these new deposits shall be allowed to remain and to undergo degenerative changes, or whether they shall be removed. If such cases are not already doomed on account of other irremovable conditions, the clearing up of such deposits removes a serious and often insuperable hindrance to their improvement, and to the arrest of the disease. This the Watery Extract of Tubercle Bacilli will do, even in advanced stages, when the patient's nutrition is still fair.

Coming now to the result of the seventy-eight cases treated and discharged, I may emphasize again that the treatment was administered under ideal conditions in every respect, and I wish to again record my faith in the helpful influence of climate, and the advantages which a well conducted institution affords. The series is too long to record individually in a tabulated form, as such a table would occupy too many of the valuable pages of this journal.

The description of the cases appears in the report of the Winyah Sanitarium for 1898, and is at the disposal of any physician who desires it.

SUMMARY OF CASES.

| Class. | No. of cases treated. | Average months treated. | Recovered, disease arrested. | Per cent. | Greatly improved. | Per cent. | Improved. | Per cent. | Grown worse or died. | Per cent. | Corresponding to |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 20 | 3 | 20 | 100 | 0 | .. | 0 | .. | 0 | .. | 1st stage. |
| B | 37 | 4 | 27 | 73 | 7 | 19 | 3 | 8 | 0 | .. | 2d stage. |
| C | 21 | 4 | 3 | 14.2 | 9 | 43 | 7 | 33.3 | 2 | 9.5 | 3d stage. |
| Total | 78 | 3.75 | 50 | 64.1 | 16 | 20.5 | 10 | 12.8 | 2 | 2.6 | all stages |

The same classification has been retained as in previous reports. The cases which are designated as "recovered" on their discharge showed no physical symptoms in the chest whatever. Where there were still evidences of the previous inflammatory process or healed cavities, the term "disease arrested" was added, which, of course, is not indicative of an absolute recovery, but relative only, the best that could be expected under the circumstances.

Among the seventy-eight cases were fourteen with tuberculosis of the larynx. In nine instances of more or less extensive tubercular infiltration of the larynx the infiltration disappeared under treatment in four, was greatly improved in two, and improved in three.

The stage of ulceration was reached in five cases. In one the ulcer was healed; in two others, nearly healed on their discharge; while one case was improved and one grew worse.

In addition to the specific remedy the usual local applications were made, but no curettement or other surgical procedures were employed.

The general improvement in this series of cases may be inferred from the almost uniform gain in weight, all patients but two having shown an increase over their weight on admission, and in many instances the patient was losing more or less rapidly on admission. In Class A, all patients gained weight, from 2 to 22 pounds, averaging 11 pounds each. In Class B, all patients gained from 2 to 44 pounds, averaging nearly 13 pounds each. In Class C, nineteen out of twenty-one patients gained from 1 to 25 pounds, averaging 10½ pounds each.

A comparison of results obtained without specific treatment and with the various remedies employed was made in my last report; adding to this the seventy-eight cases reported here and treated with Watery Extract, the differences in results appear as follows:

COMPARATIVE TABLE OF RESULTS OBTAINED WITHOUT AND WITH SPECIFIC MEDICATION.

| | Cases reported. | Recovered per cent. | Improved per cent. |
|---|---|---|---|
| Without specific treatment. | 816 | 12.1 | 31.0 |
| Treated with Koch's Tuberculin | 379 | 35.5 | 37.5 |
| Treated with Antiphthisin and Tuberculocidin | 182 | 32.5 | 46.8 |
| Treated with Tuberculin: purificatum (von Ruck) | 166 | 43.4 | 39.2 |
| Treated with Watery Extract of Tubercle Bacilli (von Ruck) | 78 | 64.1 | 33.3 |

These results speak for themselves; they were obtained in the same institution and under the same conditions in all respects, and justify the conclusion that in the production of the Watery Extract of Tubercle Bacilli as prepared by me we have made another and most valuable step toward the desired end.

ASHEVILLE, N. C., Jan. 1, 1899.

## *TWO UNRECORDED CAUSES OF DERMATITIS.*

By Anstruther Davidson, C.M., M.D.,
Clifton, Arizona.

Eczema venenata as observed in southern California is almost invariably produced by the well known and all too common poison-oak of the foot-hills and mountains. In the eastern and midland States other species of Rhus cause a similar, though probably more severe, disease.

It is generally well known that there are numerous other plants the handling of which produces in susceptible individuals more or less acute desquamative dermatitis, closely resembling that produced by the common poison-oak. Many writers have spoken of these, and in our text-books are detailed a large number of plants that are capable of producing more or less irritation when freely handled. To this increasing list I shall add two others that so far as I am aware have not been previously recorded.

M. D., an intelligent young lady of very fair complexion, one day informed me that while she was always somewhat susceptible to the ordinary Rhus poisoning she was still more susceptible to poisoning by *Solanum Xantii* Gray, the wild potato so common in southern California. As the lady in question possesses a good knowledge of botany I had no doubt whatsoever of the truth of her observation, and asked her to kindly present herself at the office when next affected.

On June 15 she presented herself at my office with face and wrists almost completely covered with acute vesicular dermatitis. On the previous evening, while hitching her horse to a tree, she had stooped down to examine a flower. As the hour was late and the flower indistinct, she stooped low, and her face may have touched the plant, though she feels almost certain she did not come in contact with it, as on recognizing her old enemy she quickly withdrew. That same night pain, itching, and swelling began, and next day the face was in the first stage of vesicular eczema, with marked puffing of the eyelids. Two days after the face looked worse, but from that time on it gradually improved, passing through the regular stages of vesication and desquamation to final resolution. While the facial appearances in general closely resembled those produced by poison-oak, there were superadded all the more evident symptoms of belladonna poisoning. The pulse was rapid; on account of the extreme dilatation of the pupil she was unable to face a bright light; accommodation was paralyzed, reading being impossible. The dilatation of the cutaneous vessels of the face added that purplish look so characteristic of belladonna poisoning. The dilatation of the pupil persisted until the 18th. This time she informs me she has had no trouble with her heart, but with all of her previous attacks the heart weakness was so apparent that she was compelled to remain in bed for several days.

Here we have dermatitis produced by a member of a plant family noted for the poisonous qualities of its fruit and foliage, but not so far as I know locally injurious to the individual handling the plant. What produced the dermatitis in this case I do not know, nor can I explain the symptoms of belladonna poisoning otherwise than by saying the patient in question was peculiarly sensitive to the effects of belladonna.

The plant under review, as its name indicates, belongs to the Solanaceæ, a family characterized by the presence of a number of potent and beneficial alkaloids, such as dulcamarine, atropine, hyoscyamine, lycine, and duboisine. How many of these alkaloids other than atropine exist in our plant I have no means of determining. None of the Solanums that exist in California are reputed poisonous. The very noxious *Solanum nigrum*, which in Europe proves so frequently fatal to children who eat the berries, is here represented by the variety *Douglasii*, and not only is it eaten with impunity, but actually with relish by thirsty children.

Another plant which frequently causes dermatitis is our common and much appreciated fig of cultivation. Among the fig-pickers, especially if children, cases of dermatitis are far from rare. I have seen a few individuals who are so susceptible to injury from the fig that they carefully avoid picking the fruit from the tree. Eating figs already plucked has no injurious effect, as the dermatitis produced is not, as in the poison-oak, due to the chemical irritants contained, but to the brittle hairs that cover the leaf, especially on its surface. In the act of picking the fruit these prickly hairs readily penetrate the flexor surfaces of the fingers and wrists, and in individuals with irritable skins a dermatitis follows in twenty-four hours, each hair having produced a minute papule with a small inflammatory area surrounding it. The dermatitis is probably produced by the mere mechanical presence of the bristle-like hairs,

as examination shows that the hair points are solid at the tip and that the basal part of the hair, which at an early stage is filled with fluid, is at the time of ripening of the fruit filled with air only. From the fact that children with their delicate and irritable skins most usually suffer from this form of dermatitis, one is led to presume that Eve when she adopted the leaves of the fig as the primary article of raiment must at least have passed the age of puberty.

The dermatitis produced by the hairs on the fig-leaf, I need scarcely add, is readily subdued by simple emollients.

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## *THE OPERATIVE TREATMENT OF VARICOSE VEINS OF THE LEG.*

By Edward Martin, M.D.,

Clinical Professor of Surgery, Women's Medical College; Clinical Professor of Genito-Urinary Surgery, University of Pennsylvania; Surgeon to the Philadelphia, St. Agnes, and Howard Hospitals.

In bringing up the subject of the operative treatment of enlarged veins of the lower extremity I have no intention of speaking of the etiology of this affection. Those who are interested in the various theories advanced to explain the relative frequency of varicosities of the leg I would refer to Dr. James J. Walsh's excellent paper, which has recently appeared in the *University Medical Magazine*. My own belief is that this disease is in many cases dependent not so much on venous stasis incident to intra-abdominal pressure, as it is upon the incompetency of the valves, and that this incompetency in turn is dependent on congenital formation rather than upon acquired pathological conditions. Certain it is that varices form in otherwise healthy individuals without appreciable cause, that they form in the vein least protected by valves and which would naturally suffer most from hydrostatic pressure, and that they have been relieved and cured by the application of an artificial valve—*i.e.*, a water pad placed over the trunk of the internal saphenous near its origin.

Congenital valvular insufficiency will explain many of these cases of varicosity of the long saphena and its branches, which are not due to external obstruction, violent straining, or thrombus.

Aside from the weight, aching, and at times acute neuralgic pains dependent upon varicose conditions of the veins of the leg, and the infiltration, inflammation, and ulceration of the skin and subcutaneous tissues, there is danger of severe hemorrhage from bursting of the vessel. I personally know of two fatal cases, and numbers are reported and still others have never found their way into surgical literature. This hemorrhage is, of course, readily arrested, but unfortunately it is liable to occur when skilled help is not at hand.

Moreover, it can readily be fancied that in some of the enormously dilated veins which are occasionally seen the diversion of such a large quantity of blood from the general circulation might seriously influence general health.

Thrombosis with consequent embolism is also an ever-present danger, especially in varicosities about the knee, and though this complication is rare it is one of exceeding gravity.

As to the relative frequency of varicosities, at least those sufficiently advanced to produce serious inconvenience or even disability, I believe there is some misconception. In the management of a number of large surgical services in the city I have been surprised at the relatively small number of patients presenting themselves for relief from this affection. Out of 12,806 surgical dispensary cases taken from the reports of several hospitals, but forty-three are reported as suffering from varicose veins—about three-tenths of one per cent of the total number. In the summer, wishing to give a special form of operative treatment a careful trial, I requested my residents at the Philadelphia Hospital to scour the female out-wards for patients on whom it would be justifiable to perform a radical cure. These are taken from the classes who are peculiarly prone to this affection—that is, the poorly nourished and hard-worked—and the great majority of them are past middle life. Of the total number I found but a single case of enlarged vein sufficiently pronounced and sufficiently discomforting to the patient to make me feel justified in suggesting operation. This was promptly refused.

It is undoubtedly true that the great majority of the cases observed can be treated satisfactorily by palliative means, notably by the truss and by the elastic bandage. In either case the appliance should be removed at night and should be reapplied before arising in the morning.

The indications for operation are: (1) A varicose condition steadily increasing in spite of palliative means, and particularly the pres-

ence of veins so dilated and attenuated that slight trauma may occasion hemorrhage; (2) intractable ulceration, infiltrations, or inflammations of the skin and underlying tissues; (3) present or prospective disability; (4) the occurrence of thrombi, particularly about the knee-joint and above it.

Injections of coagulating or irritating substances with the object of causing inflammation and subsequent cicatrization were at one time popular. Stevenson (London *Lancet*, ii, 769, 1886) employed carbolic acid. He thus treated eight cases, injecting one minim of the pure acid at several points in the vein, a ligature first being placed about the limb high up. Schede quotes Soquet and Guillermond as having reported sixty cases treated by the injection of tannate of iodine. Boight recommends injections of ergotin. Isaac injected a five-per-cent solution of sulphate of iron. Bryant injected tannin into the tissues lying about the vein. This method is dangerous and futile.

Ignipuncture is advocated by Tillman and a few of his followers, the point of the galvanocautery or Paquelin being employed.

Herepath advised subcutaneous nicking of the borders of the saphenous opening, with the idea of thus doing away with any obstruction which might be caused by this tough fibrous band.

Acupressure has had many advocates, among them Davitt, Fergusson, Lea, Velpeau, and Fricke.

Rigaud reports 160 cases cured by dissecting the vein through a small incision and exposing it to the air. Gangrene subsequently took place at the point of exposure. He lost three cases from pyemia. He very justly concludes that this method is extremely dangerous and unreliable and recommends division between ligatures under the strictest antisepsis.

Retrenching of the skin with the idea of making this serve as an elastic stocking has been practiced by a number of surgeons. Lang quotes a case of Maclaren's, this surgeon having taken an elliptical piece of skin from the back of the leg, reaching from the popliteal space to the tendo Achillis, and having obtained good results.

All these methods may be fairly considered out of date, and there remain to be considered: (1) single ligature of the saphenous vein high up (Trendelenburg's operation); (2) multiple ligature through the entire course of the varicose veins, first popularized by Phelps; (3) extirpation of the greater part or all of the dilated vein, or Madelung's operation. The names of the surgeons are thus associated with a particular operation rather because they have popularized these procedures than because they have originated them, since, for instance, resection of the vein was advocated by Celsus, and the principle of single ligature high up and multiple ligature was practiced long before the era of antiseptic surgery.

Considering these three operations, the easiest and quickest is that of high ligation. The long saphenous vein is exposed shortly after it leaves the saphenous opening, two ligatures are applied, the vein is divided between these ligatures, and the small opening is closed by a stitch. A bandage and splint are then applied and the patient is kept at rest for one or two weeks. The whole operation can be completed in three or four minutes and does not require a general anesthetic, eucaine B rendering the procedure entirely painless.

Multiple ligation as performed by Phelps is also rapidly accomplished, and it is practicable to do it under local anesthesia. He has operated on upwards of 200 cases of varicose veins of the leg without a death, and in so far as immediate results were concerned without a single failure. His method is that of multiple ligature with catgut. He aims at entire occlusion of the dilated vein, throughout its whole length, and has applied as high as sixty or seventy ligatures, the distance between these ligatures being from one inch to an inch and a half. The thread is placed subcutaneously—that is, a flattened needle threaded with catgut is driven beneath the vein, is unthreaded, is then carried over the vein through the same opening, is rethreaded, and on withdrawal of the needle the vein is included in the ligature, which is tied down tight, the knot being pushed into the skin if fine catgut is employed. The limb is splinted and the patient kept in bed for two weeks, and after that a roller bandage is applied for about two months.

This method is open to the objection that it is often difficult to pass the needle under instead of through the vein, and that the needle is liable to puncture the branches, penetrating through the deep fascia. These objections are by no means insuperable, and the permanent value of the operation must depend upon ultimate results. The total excision of the varicosity is the most difficult and tedious of all operations, and though it is

practicable to perform it under local anesthesia the majority of surgeons will probably still continue to employ a general anesthetic.

As a modification of a total exsection, multiple resection commends itself as a valuable procedure, but it is worthy of note that the great majority of surgeons who have written on this subject are strongly inclined to favor total exsection. Boennecken, Bennett, McKay, Maylard, Hause, Rogers, Duchamp, Wyman, Jonas, Remy, Dambrowski, Soldani, Rema (who obtained ten cures, twenty-two non-successes, and two deaths in thirty-four cases), White, and many others are warm advocates of this method.

High ligation of the saphenous and division between ligatures has almost as many advocates. Tillman states that Trendelenburg has practiced this simple operation for many years with the very best results, and that he considers it the best treatment for varices of the leg.

Prawdoljubow reports eight cases thus treated, with entire success. Wolff has thus successfully operated on twenty-two cases, employing only cocaine anesthesia. In every instance great symptomatic relief followed; the ulcers, eczema, and hemorrhages permanently subsided. He states that a good temporary result is always seen, but is not willing to speak definitely in regard to final results.

Remy employs both methods. Schede, van Hoeter, Schwartz, and Folker favor the Trendelenburg method. Zeses recommends multiple resections, and states that Starke, of Berlin, has reported thirty cases, all successful. Hause also reports ten successful cases. Savory also recommends multiple resections, holding that extensive dissection is dangerous and unnecessary.

My personal experience in the operative treatment of varicose veins has been limited to six cases. Four of these cases were men, two were women; three were complicated by edema, eczema, and intractable ulceration; in five the long saphena and its branches alone were involved; in one both the long and short saphenæ.

Two cases were treated by multiple ligation, eight ligatures being used in one, twelve in the other. The vein was exposed by a cut half an inch long, was ligated with catgut in two places and cut between. It was splinted for twelve days, and the patient was then allowed to be up with a neatly applied bandage.

The immediate effect was good. Standing and walking produced no sense of fatigue, and though the dilatation between the sets of ligatures remained after operation, it gradually grew less and was not materially increased by the standing posture. In one case at the time of operation the veins were found full of a soft thrombus. This was squeezed out, but subsequently reformed, and the leg remained tender and edematous for over a month. Both cases healed by primary intention.

One case was treated by multiple resections, six cuts being made, and from two to four inches of vein being taken out at each point. The immediate result in this case was more gratifying than was that from multiple ligation. The varices had almost entirely disappeared, and the subjective symptoms were relieved.

Three cases were treated by extensive resection. In two the incision was made directly over the course of the vein; here the skin was so thin and its vitality so impaired that the wound was slow in healing, although it remained entirely clean.

The results in these cases of extensive resection were better than those obtained by either of the other two methods. In the last case operated on thirty-seven inches of vein was removed. It was the most marked case of leg varix I have ever seen, the tortuous dilated vein forming a mass the thickness of a man's forearm, beginning three inches below the saphenous opening and running down below the middle of the calf. In this case the incision was made in the form of a flap. Thus the greater part of it was carried through healthy skin. This skin was dissected back, the vein was then tied above, about two inches below the saphenous opening, and was dissected downward. The patient had suffered for years from marked solid edema and a deep indolent ulcer, which had resisted absolutely every form of palliative treatment. He was a glass-blower by trade. I operated on him July 12, 1894. I have recently heard from Dr. Herbert Carpenter, of Salem, N. J., whose patient he was, who states that his ulcer healed promptly and the edema has disappeared. Since then (more than four years) he has been working steadily at his trade of glass-blowing with no sign of recurrence. The other saphenous vein was also varicose, but was not touched. It remains in the same condition.

I believe that all three of the methods at present in vogue have their proper application. When the varix is moderate in degree,

even though extensive, and where the vein is dilated high up, the high division between ligatures, performed under cocaine, should be given a trial. Should this fail and should the vein be moderately dilated, either multiple ligation or multiple small excisions would be indicated. When the veins are enormously distended and tortuous, and particularly when they contain sacculations and thrombi, total excision is indicated.

All of these methods of treatment should be supplemented by rest in bed for two weeks with careful splinting and by the wearing of a carefully applied bandage for at least a month. Operative dangers and complications are no longer to be feared.

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### *THE TREATMENT OF HEART DISEASE IN CHILDREN.*

At the last Congress of Gynecology, Obstetrics, and Pediatrics, held in October, 1898, WEILL read a paper upon this subject. In congenital lesions we are utterly unable to do any material good; but in acute endocarditis in which there is danger of the development of severe valvular lesions, preventive medicine can do much. The endopericarditis of rheumatism is affected little if at all by the salicylates, yet it is in rheumatism that these lesions most frequently occur. In typhoid fever with a tendency to heart disease the cold bath is exceedingly efficacious as a prophylactic against cardiac lesion. Antidiphtheritic serum is to be used as a prophylactic in diphtheria, and antistreptococcic serum in scarlatina. He thinks salicylate of sodium is of little avail as a direct remedy in rheumatism of the heart, but its use shortens the attack and is thereby of value. It is well borne by children, and rarely produces vomiting, vertigo, or roaring in the ears, if given in the dose of seven grains a day in the first year of life, fifteen to thirty grains up to the third year, and forty to seventy grains at ten years. The diet should also be carefully attended to. Milk, soups, and absolute rest are to be resorted to, the heart quieted if necessary by the use of small doses of bromide of potassium and digitalis, and insomnia, if marked, combated by sulphonal or trional.

To still further combat endopericarditis Weill suggests inunctions over the precordium, the application of cold, the application of flying blisters, and if the patient is strong, venesection. (With this latter plan of treatment we cannot at all agree.—ED.)

Where actual valvular changes exist blisters over the precordium, or even the application of a hot iron, are recommended, and the administration, internally, of iodide of potassium for fifteen or twenty days in each month in the dose of three to ten grains, given after two meals in a glass of milk. He thinks that about six out of every 100 cases of rheumatism in children die from rheumatic pericarditis, and that after the disease becomes at all subacute we can do little to relieve it.

Should the pericardial effusion become purulent it must be allowed to escape by means of an incision. After a valvular lesion has become chronic it is necessary to improve the condition of the heart muscle by a stimulant and nutritious diet. The patient must be continually in the fresh air. Rubbing must be resorted to to improve the peripheral circulation, and gymnastics with Swedish movements and hydrotherapy employed. Care must be taken to exercise all the muscles of the body, but not to tire them, and violent exercise must be absolutely prohibited. Such games, for example, as football and tennis, and long walks, are not to be permitted. Bicycle riding may be utilized in moderation, but great fatigue must not be allowed. Regular hours must be insisted upon for meals and for retiring. The digestive tract must be kept in good order. Severe mental work ought also to be prohibited. In paroxysmal dyspnea coming on in heart disease absolute rest, counter-irritation in the form of a mustard plaster over the precordium, and the administration of diffusible spirits, are to be resorted to. Subcutaneous injections of camphor, caffeine, and ether are useful, and inhalations of oxygen and nitrite of amyl may be used. Should there be pulmonary congestion with albuminous expectoration, active counter-irritation should be applied to the chest. Should great cardiac excitement be present digitalis or caffeine may be needed. If cough is present the administration of sedative substances, such as iodide of ethyl, pyridin, antipyrin, and bromoform, may be given. The caffeine may be given in the dose of one to two grains a day to a child of from two to five years, and four to seven grains a day to a child of seven to fourteen years. If it is desired to give it hypodermically the following solution may be used:

℞ Benzoate of sodium, 45 grains;
Caffeine, 30 grains;
Distilled water, 2½ drachms.

A small hypodermic syringeful of this may be given once or twice a day.—*Revue de Thérapeutique Médico-Chirurgical.*

# The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS,
AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

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## Leading Articles.

### *FATAL EFFECTS FROM MERCURIAL INUNCTIONS.*

Mercury is given in so many forms, and so often, to patients without producing other results than those which are good that instances in which it is administered with disastrous effects are of very considerable interest. In the vast majority of cases in which evil effects follow the employment of this drug the symptoms consist chiefly in more or less severe evidences of salivation which force themselves upon the attention of the patient and physician so early that the administration of the drug is stopped before any serious damage is produced. Sometimes, too, when mercurial inunctions are used for the removal of parasites, or in the treatment of syphilis, and active care is not exercised in the maintenance of cleanliness of the mouth, similar disagreeable symptoms ensue; and it will also be recalled that a large number of cases of subacute or chronic mercurial poisoning occur in artisans working with mercury, although in the great majority of instances the symptoms manifested under these circumstances have been those of disorder of the nervous system rather than disorders of secretions. In this connection a case which has recently occurred in Belgium is of very considerable interest, and notice of it has been taken in a recent number of the London *Lancet*. It seems that one physician was the only medical man appointed to take charge of the patients in a very large workhouse which contained no less than 4000 inmates, and that attached to this workhouse there was also an infirmary which contained from 100 to 200 patients, and that he was also in sole medical charge of 125 officials and their families, some of whom resided at a considerable distance. Because of the large amount of work which accumulated the medical officer issued an order that all infirm inmates who were admitted and suffering from vermin should receive as a routine treatment an inunction of a compound of two parts of strong mercurial ointment with three parts of vaselin, followed an hour later by a bath. The average quantity of ointment employed was about one drachm, and this treatment was carried out in about 630 patients, of whom thirty showed signs of mercurial stomatitis, seventeen of them being confined to the ward and three of them being ill enough to be taken into the infirmary. Of these three one died. He was sixty-seven years of age, and his death did not occur until a month after the inunction had been given; nevertheless the medical officer was arrested charged with manslaughter. In the medical expert evidence of the courts it could not be proved that this treatment was responsible for the death, although from the fact that an "ulcerogangrenous" condition speedily occurred it seemed as if it were the provoking cause. To make a long story short, the physician was fined fifteen francs on the ground that such heroic measures were not suited to all persons and that it should not have been prescribed indiscriminately without a medical examination. This judgment was appealed from and the defendant was finally acquitted by a higher court.

Considering the circumstances this verdict of acquittal was eminently just. It is quite possible that in such a large proportion of patients one might readily be found with an idiosyncrasy to mercury, and the labors required of this individual physician were so excessive that manifestly the blame for the accident should rest upon those who were so niggardly with their appropriations rather than upon the medical man in charge.

### *THE EXCESSIVE USE OF ALCOHOL.*

The editorial pages of the THERAPEUTIC GAZETTE have heretofore contained material dealing with this important question, and in these articles we have endeavored to show that while alcohol is a drug which is greatly abused, it is also one which, when properly employed, is, like any other powerful drug, capable of producing very good results. As persons interested in the study of the social side of mankind as well as in his physical diseases, it is interesting for physicians to note how this drug when employed by the laity without medical advice is abused. That it is so abused by the laity every one knows, and none are so blind that they cannot see it. In this connection an article upon alcohol which has been published by Debove in *La Presse Médicale* of November 16, 1898, is of very considerable interest. After reviewing a certain amount of historical data concerning this subject, he points out that it may be studied under four headings, namely, the consumption of alcohol, the effects of it on the individual and on the race, alcohol as an agent in producing intoxication, and the prophylactic measures which are to be used against the increase in alcoholism. He then points out what enormous quantities of alcohol are consumed in alcoholic beverages in France. Thus as much as 2,000,000 hectoliters of alcohol are used a year, according to official reports, and as a considerable quantity is manufactured and taken secretly the total quantity consumed is even greater than this. As much as 500,000 hectoliters of brandy are used. There has also been a steady increase for years in the quantity of alcohol which is ingested. Thus, in 1850, 1.46 liters of alcohol was consumed by each inhabitant; in 1860, 2.27; in 1880, 3.64; in 1895, 4.7; in 1896, 4.19. In addition to this there is an annual consumption per head of 25 liters of beer, 18 liters of cider, and 79 of wine, which represents about 10 liters of alcohol.

The actual consumption of alcohol in various countries is illustrated in the following statistics. It is of very considerable interest, as it shows to what an extraordinary degree France surpasses all other nations in the consumption of alcohol. Thus France uses per head 14 liters of alcohol to each individual, Belgium 10, Germany 10, Great Britain 9, Switzerland 8, Italy 6, Holland 6, United States 6, Sweden 4, Norway 3, and Canada 2. Statistics in regard to these countries, unlike those of France, show that they are using very much less alcohol to-day than they did twenty or thirty years ago. Thus the consumption in the British Isles has decreased slightly, in Italy it has decreased about one-half, in Switzerland it has decreased one-half, in Germany about one-half, and in the United States about one-half. Not only has the consumption of alcohol increased very materially in France, but, as might be imagined, the number of places at which it is retailed has also increased; thus in 1830 there were in France 281,000 public houses, but in 1897 there were 500,000, and in the Department du Nord there is one public house to every forty-six inhabitants, or to every fifteen adults. In the Department of La Seine-Inferieure there is one for every seventy inhabitants, or twenty-two adults, and in Paris there are no less than 33,000 public houses, which is more than one to every three other houses. Nor does the sale of alcohol stop here, as Debove points out, for it is sold upon railway trains and even upon the tramways at points where traffic is temporarily interrupted by change of cars. Resorting to cafés in his opinion increases its use amongst women and children as well as amongst men. Debove then goes on to express his views as to the enormous expenditures which are made by the French people in the purchase of these quantities of alcoholic beverages.

### *SALICYLATE DELIRIUM.*

Perhaps it is not as well recognized as it should be that large doses of the salicylates are capable of producing cerebral disturbances, which are naturally of a fleeting character, in that they disappear almost as soon as the administration of the drug is stopped. It will be remembered that Strümpel has recorded cases of active delirium occurring after full doses of salicylic acid, this delirium being happy in its type and occurring most commonly in young girls. In other cases full doses produce visual disturbances, which are most marked when the eyelids are closed. In this connection it is interesting to take notice of a case reported by Rendu at a recent meeting of the Société Médicale des Hôpitaux. It was that of a woman of thirty who was admitted to the hospital owing to an attack of subacute polyarticular rheumatism. An examination of the urine showed it to be normal, and no visceral lesions existed as complications. The salicylate method of

treating rheumatism was at once instituted, as much as 1½ drachms of salicylate of sodium being given each day. At the end of thirty-six hours the joint symptoms had almost disappeared and the fever was completely dissipated. That night after a chill she became violently delirious, had hallucinations of sight and hearing, with extreme agitation, and could only be restrained by force. The temperature rose several degrees; the urine was abundant and contained considerable quantities of albumen and indican. The tendency was to regard the rise of temperature and the cerebral manifestations as signs of cerebral rheumatism, and the possibility of uremia was considered. Finally it was decided, however, that the symptoms were due to salicylic intoxication. Salicylate of sodium was therefore stopped and sixty grains of bromide of potassium administered; a hot bath was also given of half an hour's duration. A milk diet was ordered. At the end of two days the patient was much better, and the joint symptoms, which had temporarily become slightly worse, were relieved by the use of antipyrin and sulphur baths.

The points which Rendu thinks are noteworthy in this case are the invasion of the symptoms without prodromes, the absence of headache and roaring in the ears, and the presence of acute delirium of maniacal form. Secondly, he thinks that the albuminuria with production of enormous quantities of indican were due to the introduction of the salicylate. Third, he does not think that they were due to uremia from renal irritation caused by this drug. The antecedents of the patient were not such as to indicate that she would have an idiosyncrasy to the drug, and a final examination of her urine on her recovery failed to indicate any disease of the kidneys.

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### *THE TREATMENT OF TRAUMATIC TETANUS BY ANTITOXIN.*

It is now several years since tetanus antitoxin serum has, on the basis of laboratory experiments, been presented to the profession as both preventive and curative of tetanus.

Though the preventive power of the serum seems to have been thoroughly proven from an experimental standpoint, convincing evidence as to its clinical value is still wanting. It has been used when wounds were of such nature as to make the development of tetanus not unlikely, and apparently successfully. Negative evidence of this nature must, however, be cumulative before it is of special value, and the record of a few cases carries with it absolutely no weight. It cannot, however, be gainsaid that the arguments in favor of preventive treatment by timely injections of immunizing serum are so strong that, with the evidence before us as to the comparative innocuousness of these injections, measures of this nature would be justified when punctured or lacerated wounds have been soiled by earth, and especially by that about stables, or when there are other reasons for supposing that tetanus may develop.

As to the curative effect of the antitetanic serum after the disease has once thoroughly developed, the case stands, as it has for the last two years, *sub judice*.

It is true that large numbers of cases have been collected, and that from them a mortality very much lower than that attributed to the disease before the advent of the new treatment has been calculated. In studying these cases, however, it will be noted that those which recovered were, with almost no exception, of the subacute type—developing more than five days from the date of infection, running a comparatively slow course, and of a nature similar to that which is typical of the cases which frequently recovered before the antitoxin treatment was known.

If the curative effect of the antitetanic serum were proven, it would be the duty of every hospital, and of every physician and surgeon, in the country to have a supply of this new and exceedingly costly drug at hand. The failure of a large number of hospitals, and of the great bulk of the profession, to take such measures that they may thus be provided at short notice, abundantly proves the lack of confidence with which this modern method of treatment is still regarded.

As a further important modification of the serum-therapy of tetanus, Roux and Borrel's intracerebral injections are worthy of comment. This method of treatment is based on certain laboratory experiments. They found that if a mixture made by rubbing together brain substance and tetanic toxin were centrifugalized the upper liquid layer of the resultant mass contained very little toxin, whilst the thick lower one, representing the nervous substance, held practically all; thus showing that the poison was taken up by the nerve cells. They also noted that immunized rabbits perished from the intracerebral injection of a dose of toxin, which could have been injected hypodermically

without causing symptoms of any kind; but that if to the dose capable of causing death when injected intracerebrally a drop of blood from an immunized rabbit were added, the injection would prove innocuous.

As a conclusion to these experiments Roux and Borrel hold that the toxin of tetanus is fixed in the nerve cells, that the antitoxin remains in the blood, and that a curative serum injected into the blood is powerless to neutralize the poison which has already entered the nerve cells, because it cannot be reached.

Tetanized guinea-pigs treated by intracerebral injections mainly recovered. Nearly all subjected to intravenous injections died.

Thus to protect the brain and upper part of the cord from tetanus, antitoxin must be introduced directly. It cannot cure the lesions, and if the medulla is poisoned at the time of injecting, as shown by impaired swallowing power and respiratory changes, the treatment cannot be curative. If, however, intracerebral injection is made before the toxin has been absorbed by the nerve cells of the vital centers, the latter may be protected against the injurious effect of the absorption.

As to the clinical results following intracerebral injection of antitetanic serum, Rambaud has collected twelve cases from foreign literature, eight of whom perished. Of the four successful cases, the incubation in one was fourteen days; in two it was unknown, there being no wound; in one it was twelve days. Apparently none of these were of the fulminant class. Three cases have been treated by the new method in this country. The first one developed tetanus after laparotomy, the incubation being ten days; the patient recovered from tetanus, but died about three weeks after the injection of acute nephritis. The second case had an incubation period of twelve days, and was in the seventh day of a mild tetanus when the injection was performed. The third case had an incubation of seven days; he died twelve hours after injection. Until a better showing is made for treating tetanus by trephining and making intracerebral injections, the profession can resort to other and simpler means with a clear conscience.

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## *THE TREATMENT OF BLOOD EFFUSIONS INTO THE KNEE-JOINT BY PUNCTURE.*

It has been sufficiently proven, both by experimental research and clinical observation, that blood effused into the knee-joint as the result of traumatism, in the main remains liquid unless the injury be of such nature as to cause fracture of the bone or very serious injury to the joint structures. As a rule the fluid blood is quickly absorbed. Even when the blood clots it is usually absorbed, but more slowly, so that after about three weeks there will remain no trace of hemorrhage excepting some pigmentation. The rapidity of this absorption is in inverse ratio to the severity of the lesion.

Although the prognosis of traumatic hemarthrosis is in the main good, it must be borne in mind that extreme tension greatly retards absorption, weakens the soft parts of the joint, and may be followed by a chronic hydrarthrosis. Exceptionally ankylosis may result from organization of the blood-clot with the ultimate formation of fibrous tissue.

As to the treatment of hemarthrosis, Volkmann advised, even in the preantiseptic period, that when the knee-joint was so greatly distended with blood that a fracture, such as that of the patella, could not be properly adjusted, the blood should be evacuated. In the absence of such an injury he advised puncture when the swelling incident to bleeding was very great.

Lübbe (*Deutsche Zeit. für Chir.*, 49 Bd., 6 Heft) holds that there is every reason for puncture in all cases of pronounced hemarthrosis; since thus is removed quickly and without danger a foreign substance which may lead to entire destruction of the joint. Of thirty-two cases thus treated in the Sailors' Hospital at Hamburg, the average duration of treatment was twenty-two days. Of twenty-two cases treated without puncture, the average period of treatment was thirty-four days. This contrast is still more striking if it be borne in mind that only the most pronounced cases attended with greatest swelling were punctured, whilst those characterized by only moderate swelling were treated conservatively.

Bondsen arrived at practically the same results from his experience at the Copenhagen Hospital. Moreover, the percentage of cases completely cured is much larger after operative treatment. A very protracted convalescence was never noted after puncture.

The instrument used was a large trocar. The operation was performed but once and immediately after the patient was taken into the hospital; the joint at the same time being washed out with either a two-per-cent carbolic solution or 1-to-5000 sublimate lotion.

In no instance was this procedure followed by bad results. The after-treatment was that common to contused joints—*i.e.*, immobilization and pressure until the inflammatory reaction subsided, and after that massage.

This treatment, which has been strongly advocated by many of the ablest surgeons, is one which has not yet become popular because of the fear, often well founded, of infecting the joint, and thus subjecting the patient, whose chances of recovery are good, to the loss of a limb, or even to the loss of life, by an operation having for its object the allaying of pain and the shortening of the period of convalescence. Modern technique has, however, reduced the danger of infection so nearly to the vanishing point that it may be disregarded. When it is considered that the effusion of blood if left to Nature's resources may entirely destroy a joint—that when it is extensive and produces great tension the joint at the best is likely to be permanently weakened—the operation of puncture seems to be fully justified, not only immediately after the infliction of the injury, but after some weeks when it is apparent that the blood is not being absorbed.

## Reports on Therapeutic Progress

*ACUTE AND CHRONIC MIDDLE-EAR SUPPURATIONS: THEIR TREATMENT.*

In the *Clinical Journal* of October 5, 1898, De Santi tells us that in middle-ear disease the following are the lines of treatment, modified, of course, according to the severity of the symptoms: The patient should be kept quiet both mentally and physically, given a good saline purge and a light diet. If there be severe pain, febrile symptoms, and considerable hyperemia, the patient being a healthy adult, the local abstraction of blood by means of leeches (eight to twelve for an adult, two to four for a child) applied to the mastoid region, or tragus, and followed by the application of warm fomentations, will give relief.

In less severe cases, or in people with broken-down health, where bleeding is contraindicated, warm sedative poultices may be applied externally, or medicated applications be instilled into the ear every three or four hours. Of such applications solutions of opium and belladonna, of morphine (two grains to the ounce), of simple tincture of opium, are the most useful. A few drops, eight to ten of the particular solution selected, are warmed and dropped into the ear, and the canal closed with a pad of cotton-wool.

In private practice a convenient form of medicament consists of aural ovoids. They are capsules of gelatin containing one-sixth grain of liquid extract of opium, or one twelfth grain of hydrochlorate of morphia, and are introduced deeply into the auditory canal with aural forceps, the meatus being then closed with cotton-wool. The capsule gradually dissolves and the pain is relieved. Should the pain be so severe as to prevent sleep, ordinary internal narcotics are indicated.

When the pain, notwithstanding this treatment, continues, and there is evidence of a collection of pus in the middle ear, as revealed by yellowish bulging of the membrane, it is necessary to take measures to evacuate the pus in accordance with ordinary surgical principles.

It is of especial importance not to delay, for the tympanic cavity is in anatomical relationship with most important parts, and it is no exaggeration to say that a timely incision may be the means of saving the life of the patient. Moreover, paracentesis or incision with a myringotome not only gives exit to the pus in the tympanic cavity, but by division of the vessels reduces the hyperemia and lessens the amount of damage which usually occurs in the membrane from spontaneous perforation; this is particularly the case when scarlet fever is the cause of the inflammation.

The operation is most conveniently performed as follows: The external auditory meatus having been thoroughly cleansed and dried, a fifteen- or twenty-per-cent solution of cocaine is sprayed on to the tympanic membrane, a suitable speculum inserted, and a good light reflected down the canal. If from the swelling of the external meatus the membrana tympani cannot be seen, it is wiser to stick to fomentations, etc.

The patient's head being held by an assistant, the membrane is freely incised from above downwards with a myringotome in the situation where there is the greatest bulging, or, if general, behind and below the handle of the malleus.

It is of importance that the incision should be a free one, as the contained pus is often thick and viscid, and moreover there is a tendency for the artificial perforation to close up too soon. After incising the membrane

the middle ear should be inflated with Politzer's bag or a Siegle's pneumatic speculum, to drive out as much pus as possible.

The auditory canal is then closed with aseptic cotton-wool; the incision must be kept patent so long as there is any discharge of pus. The patency of the artificial opening is best assured by free incision and daily Politzerization; but should there be a tendency for it to close too soon, a probe should be frequently passed through the aperture. Antiseptic cleansing should be carried out twice a day, and a lotion prescribed for syringing the nasopharynx, otherwise the condition is apt to become chronic.

In the early stages just subsequent to perforation the author orders the following treatment to be carried out: The ear to be carefully and gently syringed three or four times a day with a warm solution of boric acid (eight grains to the ounce). Whilst part of the solution is still in the meatus inflation by Valsalva's or Politzer's method is employed; this forces some of the intratympanic secretion out into the meatus, from whence it can be removed by again syringing out. The ear is then carefully dried and gently plugged with absorbent wool.

If the discharge be slight in amount syringing should be employed less frequently, and after drying the ear small quantities of finely powdered boric acid are insufflated. Under this treatment recent cases will get well in a few days to a month. It is generally necessary that the practitioner should carry out the treatment himself, or else thoroughly instruct the patient's friends in the act of syringing and cleansing, so that it shall be properly done.

Among the author's notes he finds records of several such cases, cicatrization having taken place within a month or less. Perforations due to trauma and followed by suppuration, as a rule do particularly well under the above treatment. He has had recently two such cases: in one, a lad aged eighteen, the drum was perforated by the spoke of a bicycle wheel and suppuration ensued; in the other, a lunatic girl, the perforative otorrhea was caused by a rusty nail secreted in the meatus. Both cases were cured within three weeks.

Chronic cases, which unfortunately are by far the most common, are often extremely difficult and even impossible to cure.

The general lines of treatment should be:

Thorough cleansing and disinfection of the cavities of the middle ear.

Appropriate treatment of the nose, nasopharynx, and throat.

Careful general treatment, especially with regard to such diatheses as tubercle, syphilis, etc.

Thorough cleansing and disinfection of the cavities of the middle ear are of the greatest importance, and such treatment is only in accordance with ordinary surgical principles.

Two methods may be employed—the moist and the dry. The former is applicable when there is profuse and fetid discharge; the latter when syringing causes pain or giddiness, where the discharge is slight and non-fetid, and in cases of old quiescent perforations (if they are treated at all). The author carries out the moist treatment thus: Thorough syringing of the ear with warm boric lotion (100°–102° F.); inflation of the middle ear by Valsalva's or Politzer's method, and careful drying of the parts with absorbent wool-wicks twisted on an aural probe; finally, he insufflates a very little finely powdered boric acid on to the diseased mucous membrane of the tympanum, and lightly fills the outer half of the external meatus with a plug of salicylic wool. If the discharge be very profuse, he orders this treatment to be carried out three or four times a day. As the discharge lessens, the syringing, inflation, drying, and insufflation are less frequently done, until finally the powder remains dry for days or even weeks.

This treatment may have to be persevered in for a considerable length of time before a permanent cure results; if no benefit accrues after a thorough trial, other methods or medicaments must be employed.

Of course, such complications as granulations, polypi, caries, etc., will require special attention before the boric acid treatment can be expected to be efficacious. The next most useful solution in the writer's experience is peroxide of hydrogen (fifteen to twenty volumes strength); this solution is of particular value in tubercular cases.

Of other solutions for syringing, a choice may be made from the following: Carbolic acid in water (two-per-cent); corrosive sublimate solution (1 in 3000–4000); a solution of boric acid in water and alcohol (boric acid 1, distilled water 30, rectified spirits 5); a teaspoonful of ten-per-cent alcoholic solution of salicylic acid to a wineglassful of water; glycerin of carbolic acid and liquor plumbi subacetatis (1 ounce to 10 ounces of water), a dessertspoonful in a wineglassful of warm water.

In the employment of these different solutions a choice must be made according to their antiseptic properties or any injurious microorganisms present, and with reference to the nature of the secretion itself, whether thick and tenacious or thin and watery, and according to the presence or absence of fetor.

*Treatment by Strong Rectified Spirit and Strong Astringents.*—The use of rectified spirit, first introduced by Weber-Liel, is a method of treatment often of as much service as the boric acid. It is especially indicated when there is much granulation tissue present, and after polypi have been removed.

After cleansing and drying the ear, the head is inclined well over to the opposite side, and from ten to fifteen drops of the warmed solution (usually, to commence with, equal parts of spirit and water) instilled into the ear. The drops are kept in for ten minutes; the solution is then allowed to flow out, the parts are dried, and the canal plugged lightly with salicylic wool. This treatment is repeated two or three times a day, and the strength of the spirit gradually increased until it can be borne pure.

The author frequently uses the spirit drops in combination with a solution of boric acid in water (*vide* solutions), and finds it often more efficacious than either alone.

If there be much fetor it is well to add a little carbolic (two-per-cent) to the solution. Iodoform may be combined with the alcohol, half a drachm of the powder to an ounce of the spirit.

In very obstinate cases, with extensive destruction of the membrane, excessive granulation tissue, and great swelling of the mucous lining of the middle ear, astringents or caustic applications are indicated. Ten to fifteen drops of a ten-per-cent solution of nitrate of silver are poured into the ear in the same way as the spirit drops, and when allowed to run out again the ear is syringed with a solution of chloride of sodium to neutralize any of the silver salt remaining; or the diseased mucous membrane may be rubbed over with a solution of the strength of forty grains to the ounce.

In a few cases, where there have been no signs of any acute inflammatory mischief, the writer has carefully touched the diseased mucous membrane or granulations with chromic acid fused on a probe, and has obtained good results. It must be very carefully applied as the caustic action of the chromic acid is very great.

The lessening of the discharge is an indication to diminish the frequency of the syringing, and to employ dry applications. The ear is cleansed with cotton wool-wicks and the diseased parts are insufflated with finely powdered boric acid. A powder formed of boric acid four parts and iodoform one part may be substituted for the plain boric acid, particularly in tubercular cases.

In every case of otorrhea it is incumbent on the practitioner to make a thorough examination of these regions. As the author has already stated, the majority of cases of perforative otorrhea originate in some morbid condition present in the nasopharynx, etc., and it is as necessary to treat these morbid conditions as to treat the middle ear itself. Enlarged tonsils, adenoids, hypertrophic rhinitis, spurs, nasal polypi, nasal or postnasal catarrh, must all receive the special treatment appropriate thereto.

It is unwise to remove adenoids or tonsils if there is profuse fetid otorrhea. An attempt must therefore be made to render the middle ear as aseptic as possible, and then the particular operation may with safety be undertaken. For nasal or nasopharyngeal catarrh he orders daily syringing of both nostrils with one of the two following solutions:

℞ Sodii chloridi,
Sodii bicarbonatis, āā grs. vij;
Sodii boraci,
Sacchari albæ, āā grs. xv.

One powder to be dissolved in half a tumblerful of warm water and used with the syringe.

Or

℞ Glycerin. acid. carbolici, ♏ xij;
Sodii bicarbonatis, grs. vj;
Sodii boraci, grs. vj;
Aq. destill., q. s. ad f℥ j.

If syphilis or tubercle be present they must receive appropriate treatment. Good food, fresh dry air (mountain air), good sanitary surroundings, and tonics, especially iron, must be recommended. The patient must be warned against exposing himself to cold draughts, and told to carefully avoid the entry of cold water, especially sea water, into the ear or ears.

It is only by careful attention to all these details that success to any degree is likely to be obtained. The patient or his friends must be told of the possible consequences of the disease, and strongly urged to persevere in the plan of treatment laid down by the surgeon, although it may be a long time before healing takes place.

### *ANTITOXIN IN THE TREATMENT OF DIPHTHERIA.*

McCollom, from an examination of mortuary statistics, both in this country and in Europe, and from a clinical study of 4200 cases of diphtheria, gives the following conclusions in a paper published in the *Boston Medical and Surgical Journal:*

1. That the death-rate of diphtheria has been reduced to a remarkable degree by the use of antitoxin.

2. That in order to derive full benefit from this agent it is important that it should be given in large doses early in the course of the disease.

3. That antitoxin should be frequently repeated, until the characteristic effect is produced on the diphtheritic membrane.

4. That antitoxin does not cause albuminuria, and that it has no effect in producing heart complications in this disease.

5. That the physician who does not use antitoxin in the treatment of diphtheria fails to do his whole duty to his patient.

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### *THE ANTITOXIN TREATMENT OF TETANUS.*

In the *Boston Medical and Surgical Journal* Lund reaches the following conclusions in regard to this question:

Although the statistics of the antitoxin treatment of tetanus up to the present time apparently show a diminution in the mortality under this treatment, they may be legitimately criticized as on the whole insufficient in total number, in definiteness of reports, and as probably not including all fatal cases treated.

The more carefully we study them the less evidence do we find that the antitoxin treatment, and not the mild course of the disease, was responsible for the favorable course in the cases which have recovered.

There is no satisfactory evidence that harm has resulted from the injections.

There is a distinct probability that in the great majority of the total number of cases treated the dose of antitoxin, especially the all-important initial dose, has been too small to have any possible effect upon the disease.

The treatment in view of the present intractability of the disease demands further trial.

There are certain means by which we can hope to make it more effective, and these include earnest efforts on the part of those engaged in the production of serum to secure a stronger product, and on the part of those who employ it in treatment to give a sufficiently large initial dose, and to give it at the earliest possible moment. The serum should be injected directly into the blood-stream.

The strength of the antitoxic preparations furnished by the Massachusetts and the New York boards of health, when first supplied, was so slight as to render it necessary to employ 500 cubic centimeters as the initial dose.

A valuable field for the use of antitoxin lies in its employment for immunizing purposes.

The treatment of tetanus, according to our present knowledge, should consist of: (*a*) Thorough disinfection of the primary focus by mechanical means, including, if necessary and practicable, amputation; (*b*) the thorough local employment of such chemical antiseptics as have been shown to destroy both the bacilli and the toxin; (*c*) symptomatic treatment by sedatives, etc.; (*d*) thorough diuresis; (*e*) intravenous injection at the earliest possible moment of an amount of antitoxic serum which shall contain at least 500 antitoxic units.

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### *HAS THE TREATMENT OF DIABETES MELLITUS IMPROVED?*

The recent review of diabetes mellitus at the Massachusetts General Hospital from 1824 to 1898 would at first glance appear to answer this question in the negative, for the statistics show no decrease in mortality during this entire period. But such a conclusion can hardly be drawn, since any marked changes which have been made in the treatment of this affection have been of very recent date. Even the latest works in English, not excepting that by Williamson, do them scant justice.

It is, perhaps, as much the change in our point of view of regarding the disease as the variations in treatment which are capable of producing better results. The statement occurs so frequently in text-books that diabetes is incurable, that the practitioner loses all his enthusiasm the moment a patient with this disease presents himself. In despair he attempts a palliative treatment, writes out lists of articles headed "allowed," or "to be avoided," and perhaps adds a recipe for some new diabetic flour; while in giving the prognosis the patient's courage is perceptibly lowered.

In contrast to this gloomy picture is the

hopeful view which is best set forth in Naunyn's treatise. The key-note of this is contained in the following quotation: "That cases apparently severe at the outset, when subjected to a vigorous treatment, take a proportionately favorable course, while others running a severe course are, as a rule, those subjected late or not at all to careful treatment." Coming from so eminent an authority, this statement is of the greatest value, since it counteracts the tone of the usual text-book. Naunyn, in carrying out this idea, says further: "I consider it an unfortunate curtailment of the physician's task in the treatment of diabetes where it is said, 'the essential task of the physician is to support the invalid in an endurable condition of life for a long time.' In the writer's opinion a broader, more definite purpose should be put into the treatment, namely this: the strengthening of the deranged bodily function, or at least the checking of further disintegration of the same." This change of view is our first step toward an improved treatment for diabetes.

That drugs are of little value in this disease is now generally admitted. Notwithstanding this, there are few of us who have not heard from eminent sources that considerable success has been obtained from this or that remedy. Patients like the idea of taking medicine and come to the doctor for the sake of the prescription, just as they often go to church for the music. The advice as to the diet and hygiene, either of the body or soul, forms too commonly an entirely secondary consideration. But this question of drugs, at least for a host of remedies, is definitely settled for us by the Massachusetts General Hospital report above alluded to. The pancreatic preparations proved unsatisfactory. No drug, save opium, commended itself, and that in no wise as a specific. It certainly is another step forward, this relegation of the Pharmacopœia in diabetes to a very minor position.

Rollo recommended an animal diet as long ago as 1797, and it would seem as if little improvement in treatment had taken place, or could be hoped for in the future, along this line. But the point made by Rollo was the prominence given to an animal diet over carbohydrates. Little was said of the great class of fats, and what was said was quite as much against as for their use; for example, at the Massachusetts General Hospital, as late as the period 1840–1855, occurs a record of the following diet: "Lean meat, with a small quantity of stale, dry, or toasted bread, avoiding all fatty, farinaceous, and saccharine articles." That fifty years ago there was a lack of appreciation of the importance of fats can be understood, but that this idea has been allowed to persist seems incredible. That it does persist can be seen by consulting the most recent books of medicine, or by looking over the proceedings of the meetings of the British Medical Association recently convened in Montreal.

The importance of fats is seen first from the fact that they are the form of food best assimilated by the diabetic patient. Nearly all the sugar and starch given leaves the body unused, and for every 100 grammes of albumen there is the possibility of 45 grammes of sugar appearing in the urine, whereas from fat little, if any, sugar is formed. But this is not all, and herein lies another great advantage in fats. Each gramme of fat is capable of furnishing nine calories on being oxidized by the natural process of the body metabolism, whereas a gramme of proteid matter yields but four calories, even allowing that none of it is converted into sugar. These are facts, and on these facts a rational treatment of diabetes must rest.

In the light of all this, the books still continue to recommend or countenance skim-milk and buttermilk either as a prominent constituent of the diet or as worthy of trial. The difference between the amount of sugar in ordinary milk and these by-products is unessential, but the difference in fat is so great that it amounts to more than one-half of the total quantity of nourishment therein contained. In every liter of good milk the diabetic patient receives some 300 calories more nourishment (and that of the quality best suited to his needs) than he does in skim-milk.

Following the remarks on skim-milk in the text-books comes the section on diabetic breads—that pitfall over which few pass in safety. Over and over again these have been exposed in Boston many years ago, and again this year. Need we wait until the millennium before it is recognized that a small known quantity of ordinary bread is better than an unlimited amount of bread nearly as rich, or even richer, in carbohydrates?

The commonly accepted mode of treatment of diabetics has been, and still is, of a negative character. This is a much more serious charge against it than to say that skim-milk and diabetic breads are used. Article after article is cut off from the patient's diet, and

even what is left him he is only "allowed," until finally he comes to think he eats at all only by sufferance. The secret of the successful dietetic treatment of diabetes lies entirely in the opposite direction. The diet is positive. It is not a question of how little sugar, but rather how much fat. It is not so much the withholding of articles of food as it is the prescribing of those best adapted to the patient's condition. Von Noorden gives, to form a basis of the diet, what he calls his "Eisernen Bestand," which consists of 60 grammes butter, 2 eggs, 10 grammes olive oil, 30 grammes fat cheese, 1 liter milk, and 30 grammes alcohol. This quantity of food can be taken daily, is sure of assimilation, and furnishes the patient some 1600 calories, or nearly two-thirds of all that he needs. For the remaining amount there can be considerable latitude, admitting of variety.

That one may rightly prescribe and the other follow the directions given, both doctor and patient must know the amount of food taken, and have a working knowledge of its three constituents. This can only be obtained on the doctor's part by the study of first principles. This does not mean theoretical but practical study. He must know how much butter can be taken at a meal, how much cream can be mixed with the coffee, how much oil can be used in salads, etc. Only by personally weighing and measuring the kind of food his patient is to eat can he rightly advise him. Then, if it is found that the sugar continues to be excreted, the cause can be located, and a more suitable form of carbohydrates given, or the total amount can be further restricted. Really an interested, intelligent cook is of more value to most diabetics than a trained nurse. A Denver doctor recently said of consumptives that if they wished to get cured of phthisis they must make a business of it. In diabetes this applies to doctor and patient alike. Between the two a partnership must be formed, and with a more cheerful way of regarding the disease at the outset, a better appreciation of the value of fats, and a positive diet list, the results will show that there is even in diabetes an improvement in our treatment.—*Boston Medical and Surgical Journal.*

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### *FORMALDEHYDE GAS AS A DISINFECTANT.*

In the *Boston Medical and Surgical Journal* of October 6, 1898, BROUGH tells us that he believes we have in formaldehyde the best practical gaseous surface disinfectant known. For dwelling-house disinfection it is unsurpassed. It is easy of application, and does no injury to goods. It is not ideal, its use being limited to surface disinfection. Its penetrative powers under ordinary conditions are so slight as to be almost valueless. Good results are best obtained by using a large body of gas, and having the rooms as tightly sealed as possible. Length of exposure and the influence of temperature are secondary to the amount used.

Under these conditions disinfection may be regarded as complete after the use of formaldehyde.

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### *THE PRESENT STATUS OF OPINION UPON THE USE OF QUININE IN MALARIA.*

The *Medical Record* of January 7, 1899, contains an article with this title by the editor of the GAZETTE which, while it covers ground already covered by editorials and original articles in early issues of our journal, is perhaps of sufficient interest to be reproduced in this issue. Dr. HARE says:

"The return to this country of large numbers of soldiers affected by malarial disease, and the prospect of colonization of certain tropical countries by citizens of the United States, have naturally caused much interest in malarial fever, and in the estivo-autumnal parasite in particular. Physicians in the North have suddenly developed an extraordinary degree of interest in a subject which their Southern brethren have long considered of vital importance, and in consequence have studied it with considerable zeal, so that many of them have arrived at definite views as to the matter in debate.

"With these introductory remarks I proceed to a friendly criticism of a special article in the *Medical News* of December 17, 1898, by an anonymous writer. In this article the value of quinine as an antimalarial is discussed, its praises sung, and then the writer sets his spear and proceeds to charge valiantly into the ranks of those who have the temerity to believe that quinine, like every other drug, has limitations as to its usefulness in malarial disease, and that it is given recklessly and in unnecessarily large doses. This writer also states that 'there is in the air a spirit of opposition to the drug which is liable to do a good deal of harm.' If this is true, it is unfortunate, for no one can deny that, so far as the infecting organism is concerned, quinine acts as a specific.

On the other hand, it is certainly a fact that quinine has been shamefully abused in malarial fever, that it is often given in excessive doses and in cases in which its use is contraindicated, and finally, because the practitioner has been led to believe that 'where is malaria there should be quinine,' he has been led to prescribe it without studying the case thoroughly, and therefore has failed to find that its use is sometimes unwise and that the condition is sometimes not really malaria at all.

"The objection to the paper we have quoted is not that it urges confidence in quinine, but that it urges its universal use, with disdain for those who recognize its limitations. Thus that part of the article dealing with hematuria seems to indicate that the writer falls into the category defined by himself for the writer of an editorial in the *Journal of the American Medical Association*, namely, 'one with but small experience with malaria, or perhaps none,' since in the next sentence he proceeds to tell us that the voices of our Southern medical men, of the medical men of India and of Brazil and Italy, have been as a unit in favor of the universal use of quinine. That this statement is anything but correct is shown by the fact that a very large proportion of these physicians have testified to the opposite effect. Thus, to take up the most recent literature, we find Goltmann and Krauss, the subcommittee on pathology of the committee on malarial hematuria of the Tri-State Medical Association, in a report published in the *Memphis Lancet* for December, 1898, telling us that they are 'forced to the conclusion that, malarial hematuria once begun, quinine has no place in its therapy;' and again, 'the injudicious administration of quinine is often responsible for a hematuric attack.' In *La Presse Médicale* of December 3, 1898, Vincent informs us that American statistics demonstrate that the greater number of patients survive that do not receive quinine, and Netter thinks that the absorption of quinine plays an important part in the production of bilious hemoglobinuric fever. In the THERAPEUTIC GAZETTE for 1897, page 94, Dr. Meek, of Arkansas, protests 'in the name of humanity' against the use of quinine in this affection; and many other references to papers in Southern journals during the last few years could be given, not all against the use of quinine, but the majority at least preaching care in its use and recognizing that it may do harm.

"In this connection it is proper to point out that physicians elsewhere than in America have reached similar views. Karamitsas, a Greek physician, has published in the *Bulletin Général de Thérapeutique* an interesting paper dealing with seven cases in which, in the absence of acute malarial manifestations and because of malarial cachexia, quinine produced hematuria whenever it was given; and further, these patients failed to have this symptom in acute attacks, if quinine was withheld, but suffered from bloody urine if it was used. Rizopoulos in Greece and Tomaselli in Italy have also seen cases in which quinine would produce hematuria. In Guadaloupe, Du Chassaing has reported such cases. Other cases have been recorded by Pampoukis and Chomatianos, of Athens, Greece, and also by Carreau.

"In view of these facts, the statement in the article quoted, that Koch 'started' the present reaction against quinine by stating that quinine was given too freely in African malarial fevers, and that it caused 'blackwater fever,' is scarcely correct. Whatever weight his views may have, he certainly did not 'start' the reaction.

"As long ago as 1892 the author of this paper became interested in this important question and made a collective investigation of the views of physicians living in those parts of the United States in which the mortality from malarial infection was greatest, namely, seventy per thousand or over, and reported the results to the Association of American Physicians.

"While the views expressed by my correspondents were very antagonistic, I thought myself justified in stating that quinine is often useless and harmful in the bloody urine of malarial infection, although it was also evident that circumstances might exist in which the drug could be used. Much of the contradiction is more fancied than real, and depends upon the fact that the bloody urine may be due to many causes, such as acute renal congestion in the paroxysms owing to great distention of the renal vessels, to degenerative renal vascular changes as the result of chronic malarial poisoning, because of degenerative processes which cause the red cells to disintegrate, and finally to paroxysmal hemoglobinuria not due to malaria.

"It is evident, therefore, that quinine might be useful in one case with bloody urine and not in another, and the burden of this article is not to prove that quinine is never useful, but that it is not a 'cure-all' in

these states. That it may do damage is proved by the authorities quoted, and by the following facts, which show, I think, that my friend who wrote the editorial in the *Journal of the American Medical Association*, whoever he may be, is not so ignorant as the *Medical News* would have us believe.

"That malarial poisoning does cause nephritis in certain cases is admitted by every one. Thayer tells us that in Baltimore tube-casts were found in the urine of 17.5 per cent of the malarial cases, and Osler says that albuminuria was found in 46.4 per cent of his cases in the wards. If this is true of a point so far north as Baltimore, it probably holds with greater force for those places where the malarial poison is still more virulent. Atkinson has shown that nephritis is a sequel of malarial infection; the committee of the Tri-State Society of Alabama, Tennessee, and Mississippi has found nephritis in all cases of fatal malarial hematuria; Ralfe has done likewise; and Kiener and Kelsch have reported that there is glomerulitis.

"Admitting, then, that malarial disease produces changes in the kidneys, let us see if quinine is capable of so doing. We find that all writers of experience state that quinine, particularly in full doses, possesses distinct irritative effects on the genito-urinary tract, and I have proved that in poisoning by quinine the kidneys become congested and finally inflamed.

"Guyochin has reported cases of genito-urinary irritation after the use of quinine, and Faginoti reports a case in which there were pain in the urinary passages and the discharge of a few drops of blood on urination. Monneret has seen positive hematuria follow its use, and Rivet has observed vesical spasm and hematuria after an ordinary dose of the drug. Dassat reports the development of hematuria, with retention of urine, from cystic irritation due to quinine, and Cachere records two cases in which hematuria followed the use of quinine. In one of these, a boy of thirteen had profuse hematuria after the dose of ten grains, and a girl of seven years was affected similarly whenever quinine was used. Stillé states that quinine irritates the urinary organs, and that if any part of this tract is diseased the lesion is aggravated.

"Three facts may therefore be deducted: (1) That quinine sometimes produces hematuria in malarial disease; (2) that malarial disease often congests, irritates, or inflames the kidney; (3) that quinine is capable of doing likewise.

"This paper so far has, doubtless, seemed destructive to the use of quinine in malarial nephritis and hematuria, but it is not to be regarded as advocating that no quinine be given; rather that it be given wisely. It must be evident that hematuria coming on in acute intermittent malaria is a manifestation of blood-breakdown or renal lesion, and is a result of the congestive stage of the attack. To give quinine during the hematuria is equivalent to 'shutting the door after the horse is stolen,' and in addition gives the kidneys the irritating work of elimination. It would seem more rational to give it to prevent the next paroxysm.

"In hemoglobinuria occurring with the paroxysm there is probably less danger in using quinine than when true hematuria is present, since the kidneys are not as hindered and clogged by blood-clots; but even here it must be evident that quinine can only stop future attacks, not the one already in existence. Should the attack of hemoglobinuria be prolonged, indicating that the malarial poison is destroying the corpuscles independent of the chills, then quinine may be needed. If it is given, I believe that cholagogues, followed by a brisk purge, should be used to aid in the elimination of coloring-matter through the liver and bowel, and to relieve the kidneys of all labor which it is possible to remove. If in any case the intermittent paroxysms are so frequent as to make the quinine necessary, in view of the fact that other measures have failed, the same attention to the bowels should be given; the kidneys should be flushed out by diuretics such as the vegetable salts of potassium, and the quinine be given because the danger of the continued attacks is greater than that of renal involvement from the drug.

"The third class of cases, namely, those which are included under the severe forms of bloody urine associated with jaundice and general hemorrhages from the stomach, the bowels, and the nose, are more difficult to treat than those just discussed. They present all the difficulties which non-hemorrhagic remittents produce, and the peculiar inability on the part of the absorbents, coupled with the bilious vomiting, makes all medication difficult, let alone the complication of bloody urine.

"Much that has been said in regard to the condition of the kidneys and the contraindi-

cations to quinine in the milder forms of malaria, already spoken of, holds true with the severe form of hematuric fevers, yet here the very severity of the infection calls for quinine, although the contraindications are stronger than ever. This may be cleared up, however, by a recollection of three facts, namely: (1) that this malignant form comes on suddenly with the access of a malarial attack in a patient already broken down; (2) as an attack of hematuric jaundice without any evidence of another dose of malarial poison; (3) there are a number of remedies which are capable of doing much good before quinine is resorted to. The quinine will be needed in the cases suffering from active malarial paroxysms imposed on the subacute or chronic forms, but will not be needed in the second class of chronic cases, which should be treated by other measures directed to the relief of the dyscrasia and bloody urine.

"It seems evident, therefore, that quinine, like the tints of the artist, must be 'mixed with brains' if the best results are to be obtained, and that its routine use with blissful ignorance of its dangers ought not to be advocated; while on the other hand, no one should for a moment cast discredit upon a truly specific remedy."

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### *SOME PRACTICAL POINTS IN THE TREATMENT OF THE CHRONIC FORMS OF HEART DISEASE DUE TO RHEUMATISM.*

The London *Lancet* of December 10, 1898, contains an article on this topic by ERNEST SANSOM, of London. He tells us that often in a patient who presents himself to us after convalescence from an attack of rheumatism it is found there is something wrong with the heart — either morbid enlargement without other signs, or murmurs indicative of incompetence of the mitral or aortic valves. It should be realized as the first practical point that even though weeks and months may have elapsed since the obvious symptoms of rheumatism, it is most probable that the rheumatic disease in and about the heart is not absolutely quiescent. Slowly and without betrayal by symptoms the changes go on in the endocardium and the fibrous structures of the valve and its neighborhood. If things go well a mere thickening results, the valve curtains remaining competent; if adversely, there is contraction of the firm and thick tissue, degenerative changes supervene, and the valve becomes incompetent. But this may not be all; there may be waves of retrogression alternating with improvement, successive storms of disease with enlargements and shrinkings of the heart.

The first practical point urged by Dr. Sansom in regard to treatment is that we should realize that the problem is not the simply statical one of restoring a lack of power in the heart muscle, but a dynamical one of overcoming the influences of various factors and varying phases of disease. Take, first, the medicinal treatment. There are signs of some cardiac failure, and the question arises, shall we prescribe digitalis in some form? Many of us have had most favorable experiences of the usefulness of the drug. Suppose that the patient who has come to us has given evidence of the difficulty of breathing, of effort, of some pretibial pitting, or more marked signs of edema of the lower extremities have appeared, and possibly of basic edema of the lungs. Digitalis is given in the form of tincture, infusion, or powder, and after a few days, perhaps even though complete rest has not been enforced, there is vast improvement—the output from the kidneys has been increased, the diuresis has cleared away the dropsy, and after some days of further treatment the adverse symptoms vanish.

But the experience of a second case may be very different. Administration of the drug fairly in increasing doses during five or six days is followed by no sign of amendment. Perhaps there is evidence of intolerance in vomiting, of diarrhea, of signs of faintness, of irregularity of the rhythm of the heart; or that without any such signs the drug disagrees — it is simply inert. The pulse is not rendered slow, the tone of the artery does not improve, diuresis does not result, and the dropsy persists or increases. How are we to interpret the facts? Sansom thinks they may be briefly elucidated thus: If there be no rheumatic febrile disturbance, and if the heart tissues are not undergoing active inflammatory changes, digitalis properly administered acts well. If there be waves of active inflammatory action, circumstances not always to be readily discovered, digitalis fails. Such has been Dr. Sansom's experience. In a paper founded on precise investigation by Dr. Lauder Brunton and Dr. Theodore Cash the authors thus express themselves: "The administration of digitalis, or of drugs which act like it, to patients in a febrile condition is likely to have much less

effect on the pulse than at the normal temperature, and if the temperature be very high they may have no effect at all while this persists. When the temperature begins to fall the pulse naturally becomes slower, and this slowness is increased if digitalis has been given at the height of the fever. It is therefore evident that digitalis and its congeners, if they are given at all when the temperature is high, should be given with great care, for otherwise the medical man may be induced by the apparent inaction of the remedy to push its administration too far during the fever, with the consequence of producing too great depression of the pulse during defervescence." Dr. Sansom supplements this by expressing his own opinion that not only during periods of rheumatic pyrexia, but also when the heart structures are actively infiltrated during rheumatism, though it may be in the apparently chronic stages, digitalis is often inert or harmful.

If two, or perhaps three, days have passed without improvement the drug should be omitted and the patient advised to take perfect rest in bed. Of course, the withholding of the digitalis should be earlier if signs of intolerance arise. Now comes the question of counter-irritations or topical applications to the præcordia. Small blisters may be applied after the manner recommended by Dr. Caton, of Liverpool—one of the size of a half-crown near the heart's apex, and when the consequent irritation is subsiding a second blister of similar size close to it, and others following. Or these small blisters may be placed over the intercostal spaces. In France the thermocautery (*pointes de feu*) is most frequently employed. Though these methods may tend to relieve subjective symptoms, Dr. Sansom has not been convinced that they have any decided therapeutic effect. He thinks that there has been much more decided evidence of amendment from the topical application of the ice-bag as recommended in pericarditis by Dr. D. B. Lees. An ice-bag suspended from a cradle should rest lightly over the heart region, a thin layer of flannel intervening. The ice-bag may be applied for periods of half an hour and removed for like periods. Usually the patient is made comfortable by these means and the heart tumult is allayed. A temporary dilatation of the heart may under such treatment subside in two or three days. A small hypodermic injection of morphine acetate or morphine hydrochlorate, from one-tenth to one-fourth grain, is a great aid to the calming and comforting of the patient. Dr. Sansom says he thoroughly indorses Dr. Clifford Albutt's commendation of this therapeutic plan, which he himself introduced in heart cases. "By the mouth opium is behind other sedatives in value, its use being attended by grave drawbacks, but hypodermically, in doses beginning at one-tenth of a grain and gradually ascending to a quarter of a grain if necessary, it is a precious means of relief. The physicians who still protest against its use are unfamiliar with the practice. There is no remedy which calls forth so warm a tribute from the patient himself." From these considerations the second practical point he insists upon is that any sign of rheumatic storm in the heart—a state of things occurring in an apparently chronic phase and obscurely indicated by symptoms—should be treated by placing the patient at rest in bed.

Sansom thinks it his duty to utter a warning note against the indiscriminate use by the non-medical public of methods of muscular exercise. In many cases of organic heart disease in their truly chronic stages these methods of increasing the physiological activity of the heart muscle are of very high value, but there is much danger in the case of the rheumatic heart even though the disease may seem to be chronic. If there be the rheumatically swollen heart—a condition of which the patient himself may be unconscious—the use of muscular exercises should be prohibited. To advise these would be equivalent to a direction to a patient with inflamed joints to run. After a period of such absolute rest exercise should be commenced gradually, for too long inactivity is of course harmful, but the question of the duration of the period of complete repose should be left to the medical adviser.

Can medicines aid the absorption of the effusions in and about the heart in the seemingly chronic stages of rheumatism? Sansom thinks it is generally agreed now that salicin and the salicylates have no directly favorable influence. Indirectly ministering as they undoubtedly do to the comfort and well-being in the acute stages and when the joints are painful, they are inert as regards any heart inflammation. He says he has some lingering affection for the old alkaline plan of treatment in the more chronic stages. He prescribes alkalies with no idea of neutralizing any morbific acid, but simply because he thinks they soften membranes, increase osmosis, and thus facilitate the work of the

lymphatics. Another plan of treatment which he believes to be of great value is the administration of small doses (one-half grain) of calomel three times a day for periods of three or four days together. In many cases he has seen what has seemed to him an extraordinary improvement under such plan of treatment.

After the systematic use of the ice-bag has been omitted it seems to be useful to apply iodine in some form over the integument of the præcordia. Painting the surface with liniment or tincture of iodine is a well known procedure. The method which he adopts of inunction of an ointment of iodide of ammonium is, he thinks, much to be preferred. A drachm of iodide of ammonium is to be intimately mixed with an ounce of benzoated lard. The ointment is rubbed into the skin over the heart region by means of a piece of flannel or a pledget of cotton-wool for two or three minutes night and morning. After the rubbing a piece of cotton-wool, flannel, or light tissue is to be kept over the surface. This ointment does not stain the skin like iodine preparations, and it causes little or no irritation, though it readily permeates. He thinks it much to be preferred to our old friend the belladonna plaster, and certainly preferable to the sticky, messy, dirty perforated abominations which some of our patients delight to disfigure themselves with. Moreover, there is no interference with the daily ablutions or affusions with sea-water, which are so generally beneficial.

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### *ANIMAL VS. VEGETABLE FERMENTS.*

AUSTIN contributes the results of a series of experiments on this topic to the *Boston Medical and Surgical Journal* of December 8, 1898. He finds that taka-diastase possesses a greater power of converting starches, in proportion to its weight, than does saliva or pancreatin, though perhaps the test was not fair to saliva, as the amount, one cubic centimeter, was arbitrarily taken as an equivalent to one-tenth gramme pancreatin and taka-diastase; since, however, only 5½ parts per thousand of saliva are solid, 5.5 milligrammes are compared with 100 milligrammes. All of these digestants are practically nullified in an acidity equivalent to that of gastric juice, so that practically no digestion can take place in the stomach from any of these digestants.

These digestants are not destroyed by the acidity of the gastric juice, and there is no practical reason why their activity should not go on after they have passed into the intestines and alkalinity is reestablished.

Taka-diastase apparently carries the process of amylaceous digestion a step farther than the other two, forming dextrose instead of maltose. In how far this is of value he thinks we cannot say until we know more about the condition attending the secretion of succus entericus, which contains the major part of the invertin, and whether it is ever absent.

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### *CONSTIPATION AND ITS MODERN TREATMENT.*

HERSCHELL in the *Clinical Journal* of November 30, 1898, states that he is afraid that the rising generation of medical men are in danger of losing much of that *finesse* which enabled our forefathers with but a limited selection of drugs to adapt them as perfectly as they did to the circumstances of the case. The art of prescription writing for a perfect laxative pill—a pill whose action should be at once pleasant and adequate—is almost a lost one. There was generally a reason for each ingredient in their time-honored formulæ. Take, for example, the pilula aloes et myrrhæ of the British Pharmacopœia. How many young practitioners could tell offhand the utility of the gum-resin? And in consequence, because they cannot see the use of it (practical therapeutics having been relegated to a very secondary place in their scheme of education), they rarely prescribe it. And yet, as a matter of fact, it is of extreme value, and gives to the pill its characteristic action—that of a laxative without a tendency to be followed by subsequent constipation. It was found by clinical experience that the addition of a resin, devoid of active purgative properties, prevented to a great extent reaction in the direction of constipation by possibly acting as a tonic to the mucous membrane, and so the pil. aloes et myrrhæ came into being. In the treatment of chronic constipation drugs are of extreme use, but to make them reliable tools we must thoroughly understand how they act and what we are going to do with them. The medicinal substances which we shall find advantageous to use may be arranged in the following groups:

1. Those which excite peristalsis. Of these we have nux vomica and Calabar bean.

2. Those which relieve spasm. In this group we find belladonna, the bromides, valerian, and perhaps asafetida.

3. Drugs which increase the secretions of the gastrointestinal tract. The most useful of these are chloride of ammonium and phosphate of soda.

4. Medicines having a beneficial effect on the neurasthenic condition — valerianate of zinc, nitrate of silver, ergot, arsenic, and the glycerophosphates of soda. The glycerophosphate of lime must be avoided, as it has a distinctly constipating effect.

5. Laxatives. These are never to be used except in special circumstances.

With these few drugs at our command we are in a position to very materially assist the action of the other means which we are using. If there is enterospasm we shall give belladonna or one of the bromides. If the peristalsis is defective, nux vomica will be found useful. When the stools are dry and hard we shall employ with great advantage drachm doses of phosphate of soda in combination with a bitter, and perhaps taraxacum; or we shall take advantage of the undoubted properties of chloride of ammonium in increasing the intestinal secretions. We owe not a little of the knowledge which we possess as to the action of the latter drug to the valuable researches of Lockhart Gillespie. In addition to its action upon the intestinal tract it appears to have the remarkable power of removing any dyspeptic symptoms which may be present. This is probably due to its action in increasing the amount of hydrochloric acid in the gastric secretion.

But the question will probably now be asked, how are we to secure adequate actions of the bowels during the course of the treatment?

From the first we must make up our minds to abandon the use of purgatives. We must procure the necessary actions:

1. By the use of a small daily enema of cold water. Whilst enemata of hot water distinctly relax the intestinal tissues, cold water acts as a tonic, and may be used with practical impunity. At first we may give a small injection every day, and as by degrees the intestines take on their normal function it will be required less frequently until we can dispense with it altogether. For slight cases this will be sufficient.

2. The oil enema. This has been already alluded to in the paragraph upon removing the contents of an impacted rectum. But it has even a more important use as a means of procuring a daily action of the bowels, and should be immediately resorted to in cases which resist the simple enema of cold water. For these cases the best way of administering it is by means of an ordinary glass funnel. A long colon tube is passed up into the bowel about twelve inches, and is connected by a short length of tubing to the funnel in question. The patient is lying on his side in bed with the pelvis elevated a few inches. The physician, standing by his side, holds the funnel with the left hand a foot or so above the patient, while with the right he slowly pours into it the oil, which has been previously warmed. The oil should be introduced into the bowel very slowly, at least fifteen minutes being taken up in doing so. About ten ounces will be sufficient for an adult, and two or three for a child, according to age. The oil should then be retained as long as possible, and if the injection be given at bedtime the action of the bowels will often not take place until the following morning. The effect of one injection will usually last for several days, and often for a week, the patient having a daily stool during that period. When the effect passes off another should be given. In any case where it is desirable to procure the maximum effects these injections may be given every day. It sometimes happens that in certain cases the oil will be found to produce an unexpected purgative effect. In these cases there is probably some increased peristaltic action which hurries unduly the bile and pancreatic juice along the intestines, and these, coming in contact with the oil, form irritating soaps. It is advisable when using oil enemata to now and then administer a large alkaline douche.

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### *THE PHYSIOLOGICAL ACTION OF CACTUS GRANDIFLORUS.*

In the *Revue de Thérapeutique* of October 28, 1898, ANISTIMOFF has recorded in a St. Petersburg thesis twenty-seven experiments which he has made upon dogs. He finds that in the dose of 0.2 to each kilogramme of the animal cactus causes a marked slowing of heart and an increase of the blood-pressure. This slowing is due to the influence exercised by the cactus upon the inhibitory centers of the heart, and the rise of arterial pressure is due to its action upon the vasomotor center in the medulla and also to stimulation of the nervomuscular fibers in the peripheral blood-vessels. In human beings he found that the prescription of fluid extract of cactus in the dose of three to ten drops three or four times

a day slowed the pulse in the majority of cases, but in other instances produced no modification in its rate. It increased blood-pressure and increased diuresis. Under its influence in cardiac disease dyspnea and cough were diminished. He does not think that the drug is capable of producing cumulative effect, but believes that it is particularly indicated in functional troubles of the heart, as, for instance, in Graves' disease and in nervous palpitation.

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### *THE TREATMENT OF ASTHMA.*

The *Revue de Thérapeutique Médico-Chirurgical* quotes VON NOORDEN as having stated that atropine in ascending doses is the best treatment of asthma of spasmodic type. The treatment should be continued for from four to six weeks. In his hands the method consists in administering $\frac{1}{120}$ of a grain of atropine every two or three days, and then gradually increasing the dose until it reaches as much as $\frac{1}{20}$ or $\frac{1}{12}$ grain, after which the dose may again be decreased. It is necessary that the patient should be continually under the observation of the physician to avoid accidents under this method of treatment, but with care accidents are not met with.

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### *THE VALUE OF PHOSPHORUS IN RICKETS.*

A number of years ago WEGNER (*Journal de Médecine de Paris*, Oct. 16, 1898) described the changes which are produced in the bones of animals by the ingestion of phosphorus, and for this reason supposed that it would prove a valuable remedy in the treatment of rickets. Kassowitz, who applied this theory to the treatment of infantile rickets, obtained excellent results and stated that in the dose of one-fiftieth of a grain a day the symptoms of rickets rapidly disappeared. On the other hand these statements have been contradicted by other observers. Baginsky, of Berlin, has employed phosphorus to combat rickets and observed eight cases out of seventy-two which presented slight amelioration.

Leray observed twenty-five cases, amongst which seven seemed to be benefited, while in the remaining eighteen the results obtained from the administration of phosphorus were doubtful or of no value.

Weiss, of Prague, in seven cases, obtained only one positive result. On the other hand, Swetchen has observed forty-one cases with four cures, twenty-four improvements, and the balance were not benefited. In other words, it is evident that phosphorus is not by any means a specific in this condition, but that it may be employed as an adjuvant to other treatment.

In the *Revue de Thérapeutique Médico-Chirurgical* of November 1, 1898, Lop, of Marseilles, makes a report upon the influence of rest upon rickets and upon its treatment by phosphorus. The formula which he employs, according to the method of Kassowitz, consists in:

℞ Phosphorus, 1-20 grain;
Lipanin, 1 ounce;
Powdered sugar and powdered gum arabic, of each ½ ounce;
Distilled water, 1½ ounces.

A small teaspoonful of this represents about one milligramme of phosphorus. In certain cases in which the digestive apparatus is in good condition Lop administered in addition and as a vehicle for the phosphorus cod-liver oil. He ordered two grains of phosphorus dissolved in a quart of the oil, and then gave small doses of the mixture—one or two teaspoonfuls. Should there be any evidences of gastrointestinal or other derangement produced by the phosphorus treatment, it is temporarily stopped for from four to twelve days. The patients which he treated, for a sufficient length of time to gain any definite knowledge concerning them, ranged in age from eighteen months to four and a half years. Their rachitic symptoms were marked, being cranial tabes, large bellies, dilatation of the stomach, diarrhea, defective dentition, and incomplete growth.

In a large proportion of the cases good results were not obtained until after the treatment had been maintained for a good many months. Seven of his patients presented very marked improvement after eighteen to twenty months of treatment. Five others showed moderate symptoms of improvement after ten months, and one of his patients died of lienteric diarrhea.

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### *THE TREATMENT OF ANEURISMS OF THE AORTA BY HYPODERMIC INJECTIONS OF SERUM GELATIN.*

HUCHARD reports upon this treatment in *La Presse Médicale* of October 26, 1898, and states that he has obtained relative cures in aneurismal tumors after twelve injections. He also cites the case of Boinet, who has

obtained unfavorable results, and a second case in which no results have been obtained by Barth. In the case of Boinet the first injection did not favor the deposition of the clot in the proper portion of the aneurism, with the result that there was contraction of the pulmonary artery followed by pulmonary tuberculosis and death. In the case of Barth the patient, a woman of forty-nine years, had an aneurism of the ascending portion of the aorta. Under the use of iodide of potassium no beneficial results occurred, and after the injections of gelatin had been made three times in one week fever developed, and after five injections (though diminution was observed in the tumor) the temperature rose still higher and a large abscess developed. The patient had symptoms of dyspnea, which became more and more severe, and death finally ensued. At the autopsy an aneurism was found occupying the ascending portion of the arch of the aorta. Coagulation had taken place in a considerable portion of the sac and also extended in the left subclavicular artery. On the other hand, there is no doubt that these injections sometimes aid in the coagulation of blood in aneurismal tumors.

Apropos of this a report made by Lancereaux to the Paris Academy of Medicine, October, 1898, is of interest. He described five patients with aneurism of the arch of the aorta, who were treated by subcutaneous injections of a solution of gelatin. This solution was composed of thirty grains of gelatin in three ounces of normal saline solution, .6 of one per cent. It was injected under the skin of the buttock and deep into the subcutaneous tissues in the dose of three ounces, and these injections were repeated at different intervals varying from two to twelve days; ten, fifteen, or twenty injections usually sufficed to produce a complete cure. In the discussion which followed his paper, Huchard confirmed the statement that these injections give good results, and stated that they are to be employed to combat otherwise hopeless aneurisms of large size, and further, that the injections cause little inconvenience, although they are somewhat painful. He also quoted a case of hemoptysis described by Rasmussan in which similar injections had been made for the purpose of controlling hemorrhage, with good results. The only danger in this treatment seemed to be the possibility that the clot while forming might in part be swept off into the general circulation.

### *THE USE OF CANNABIS INDICA AS A LOCAL ANESTHETIC.*

The *Journal de Médecine de Paris* of October 30, 1898, states that AAROUSIN has employed cannabis indica with good effect as a local anesthetic to relieve dental pain. The tincture is diluted three to five parts with alcohol, and is introduced into the cavity of the tooth by means of a tampon of cotton. These tampons are also placed about the gum below the tooth. This author asserts that in the course of a few minutes a considerable degree of anesthesia is produced. If the alcohol is too strong the tincture may be diluted by means of hot water.

[Personally, we doubt whether cannabis indica possesses much local anesthetic power. —ED.]

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### *THE VALUE OF METHYLENE BLUE IN THE TREATMENT OF NEPHRITIS OF A HEMORRHAGIC TYPE.*

NETCHAEF (*Journal de Médecine de Paris*, Oct. 16, 1898) has written of the value of methylene blue in the treatment of nephritis of a hemorrhagic type. Seven cases of nephritis were treated by Lemoyne by methylene blue; three recovered and four were much benefited. He quotes Dehio and Einhorn as having written favorably of the influence of methylene blue in this affection, and Kramer is stated to have administered this drug in four cases in the dose of two grains given three times a day. Under its influence it is claimed that the blood disappears from the urine, the albumen is greatly diminished, and the patient's general condition is much improved.

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### *THE DANGER IN THALLIUM ACETATE.*

During the past year or two a number of the French journals have contained articles describing the value of thallium acetate for the purpose of controlling night sweats in tuberculosis. It will be remembered that the dose which was used was 1½ to 3 grains, which was given an hour before the expected sweat, and that often a single dose produced the desired result, although sometimes it had to be repeated. There seems to be no doubt that thallium acetate possesses this power, but, on the other hand, it is worthy of note that it is capable of producing alopecia, which in one case recently reported by Huchard was so well developed that complete baldness followed the use of a number of doses.—*Journal de Médecine de Paris*, Oct. 16, 1898.

*THE TREATMENT OF RINGWORM OF THE HEAD.*

In *Treatment* of October 27, 1898, ALDERSMITH writes on this subject. He thinks that the first duty of the medical attendant is to most carefully examine the whole scalp, and to mark out all the diseased places if the extent is not sufficient to warrant shaving the head. If there be only one or a few places, it is infinitely better to mark them by cutting the hair from them, and for one-third of an inch round them. It is useless for a medical man simply to write a prescription, and to tell the mother to look over the head and apply an ointment to the places; but he ought to find all the places, or order the scalp to be shaved, and give most minute and definite instructions to the mother or the nurse.

If the patches are extensive, and over most of the scalp, shaving or close clipping is advisable; but it is well to leave a small fringe round the scalp, so that it may appear under a cap. Tinea, as a rule, does not invade the edges of the scalp, and a fringe can generally be left.

The second point to remember is—especially if there be only one or a few patches—that the spread of the disease ought to be stopped at once. Many cases are allowed to spread from one or two small places over most of the scalp from forgetting to use a parasiticide over the entire scalp. It is essential to treat the whole scalp, even if only one place can be detected. Therefore, after the places have been marked, the head should be thoroughly washed with Jeyes' or carbolic soap, and, after drying, a lotion or ointment should be well applied. Sulphur (precipitated) is the best thing to use for this purpose, mixed with salicylic acid or white precipitate:

(1) Sulphur. præcip., ʒ j, ad ʒ iss;
Acid. salicyl., gr. xv, ad gr. xx;
Adip. benz., q. s. ad ʒ j.
M. ft. unguent.

(2) Sulphur. præcip., ʒ j, ad ʒ iss;
Hydrarg. ammoniati, gr. x, ad gr. xv;
Creasoti, ♏ xv, ad ♏ xxx;
Adip. benz., q. s. ad ʒ j.
M. ft. unguent.

(3) Sulphur. præcip., ʒ j, ad ʒ iss;
Glycerin., ♏ xx;
Spirit rect., ʒ ij;
Acid. salicyl., gr. v, ad gr. xv;
Aquæ, q. s. ad ʒ j.
M. ft. lotio.

A lotion or ointment should be used to the scalp every night, and ringworm very rarely spreads if either of the above have been properly applied; but of course other small places, which were just commencing and not seen at the first examination, may be found during the next fortnight, and must be marked and treated. When all spread has ceased, carbolic glycerin (1 in 8) is very useful to apply to the rest of the head.

If the places be few, it is far better to mark them out, and to use some strong lotion or ointment to them, than to shave the head and treat the whole scalp with the same ointment. If a boy, it is better to have the rest of the hair cut moderately close (half to one inch); if a girl, it is quite possible to cure ringworm without cutting the rest of the hair, but most careful examinations must be made from time to to time to see that every place is under treatment.

In a short article it is impossible to describe all the treatments for ringworm, or even to fully describe many, with all the notes about isolation, prevention of spread to other children, the use of caps, and the proper way to apply ointments and lotions; and reference may be made to where the author has more fully described them.

One of the last remedies advised is formalin. The writer never uses it now, and believes it to be extremely painful, and often productive of scars. Croton oil, if properly applied, is far safer to use, and much less painful. Personally, he usually cures small places of tinea by inflaming them with croton oil, and refers to this treatment later on.

The usual parasiticides employed are as follows:

Goa powder (chrysarobin) may be rubbed into the places with water or lemon juice, or used in an ointment or lotion; but it should not be employed for extensive forms of the disease, and is rarely successful in chronic cases. The following combination is useful:

℞ Chrysarobini (Kemp & Co.), gr. xx, ad gr. xl;
Acid. salicyl., gr. xx, ad ʒ j;
Olei amygdalarum, ʒ ij;
Adipis lanæ hydrosæ (lanolin), q. s. ad ʒ j.
M. ft. unguent.

Sulphur may also be added. Directions should be given to have the ointment well rubbed into the places for at least ten minutes at a time, twice a day. Precautions must be taken to prevent the ointment getting over the rest of the scalp, or on to the face. Chrysarobin dissolved in benzol or chloroform may also be used to small places; and elsewhere he has described its use.

Coster's paste:

℞ Iodi, ʒ ij;
Ol. picis liquid., ad ℥ j.
M.

This is very useful for small places, and should be applied till a scab forms; then this must be picked off, and the paste again applied, till all the diseased stumps are removed.

Creosote may be used with turpentine, or iodine. A mixture of creosote and iodide of sulphur is good—twenty to forty grains in one ounce of creosote or a mixture of creosote (two parts) and turpentine (six parts).

Iodide of mercury is an excellent parasiticide for small places.

℞ Hydrarg. iodi rubri, gr. iv, ad gr. vij;
Sodii iodidi, ʒ ss;
Spirit. chlorof., ʒ ij, ad ʒ iv;
Aquæ, ad ℥ j.
M. ft. lot.

This must be well soaked in, but must not be strong enough to produce scabbing, and ought only to be employed for small places.

Perchloride of mercury he never employs; it is inferior to the red iodide, and more likely to cause poisoning if used too strong.

Salicylic acid is a safe and excellent parasiticide, and one frequently advised. A good formula is:

℞ Acid. salicyl., gr. x, ad gr. xxx;
Etheris, ʒ ij;
Spirit. vini rectificati, q. s. ad ℥ j.
M. ft. lot.

This may be soaked into the places, and had better be used only ten grains to the ounce at first, and then increased. It may also be dissolved in chloroform and ether for small places, as this dissolves the fat, dehydrates the hairs, and often causes them to come out.

Salicylic acid can be freely used in ointments (twenty grains to one drachm) combined with precipitated sulphur (1½ to 2½ drachms), and is most useful for extensive forms of the disease, and in young children.

Sulphur is one of the best applications, and may be used as above, or with white precipitate.

℞ Sulphur. præcip., ʒ iss, ad ʒ ijss;
Hydrarg. ammon., gr. xv, ad gr. xxx;
Acid. salicyl., gr. 20, ad ʒ j;
Olei amyg., ʒ ij;
Lanolin, q. s. ad ℥ j.
M. ft. ung., or it can be mixed with benzoated lard.

Oil of turpentine can be used with iodide of sulphur and creosote. Some speak highly of first washing the scalp in hot water, then soaking with turpentine, and, while still wet, applying tincture of iodine; but this treatment, like most others, often fails in completely curing ringworm.

The essential point in treatment is to persevere with the lotion or ointment for some time, and not to continually change the application, for it must take two or three months to get out all the diseased stumps, and for the new hair to grow. Only perseverance and great care in finding and marking all the places will insure success.

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### *AN EXPECTORANT MIXTURE.*

The *Journal de Médecine de Paris* of October 30, 1898, states that the following formula is a useful one for the purpose of facilitating expectoration:

℞ Apomorphine hydrochlorate, 2 grains;
Dilute hydrochloric acid, 20 minims;
Simple syrup, 2 ounces;
Distilled water, 6 ounces.

For an adult one, two, or three teaspoonfuls of this mixture may be taken every two or four hours, or a small coffeespoonful may be given to a child, equally frequently. The idea is to give enough to cause the expectorant effect without nausea and vomiting.

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### *A CLINICAL CONSIDERATION OF THE USE OF THE IODIDES IN CHRONIC PARENCHYMATOUS, AND OF CREOSOTE IN SUPPURATIVE, NEPHRITIS.*

Under this interesting title WEBER writes in the *Post-Graduate* for October, 1898. He tells us that after sufficient clinical observations of the good influence of small doses of the iodides in certain forms of chronic nephritis during the last eighteen years, and the value of creosote in the medical treatment of inoperable surgical kidney in the past six years, he believes he is justified in drawing the following conclusions:

The iodides given in relatively small doses, three or four times daily, and continued for many months and even years, have the power to retard, modify, and improve subacute and chronic inflammatory processes concerning the connective tissue of parenchymatous organs like the kidneys, the liver, the lungs, and particularly the sclerotic disease of the arterial vessels.

It appears that this salutary effect is brought about by direct inhibition of the proliferation of the connective tissue, as well as by subsequent induction of disintegration and fatty metamorphosis of infiltrated corpuscular elements and the removal of the same.

It is reasonable to hold that the drug manifests and develops its activity through the lymph channels and spaces of the affected organs by direct action upon the irritating substances, by stimulating the vasomotor nerves and increasing the functional activity of the parts.

The favorable influence of the iodides can be clinically demonstrated, and is more decided in arterial sclerosis than in similar disease of parenchymatous organs, and will show itself frequently, whether the underlying cause is gout, alcoholism, or syphilis. In cases with a syphilitic history, however, it is well to give larger doses of the iodides for a while—*i.e.*, from ten to fifteen grains, three times a day.

Creosote in doses from two to four to six grains, three times a day, steadily administered, he recommends as a safe and trustworthy remedy in suppurative disease of the urinary organs. Guaiacol carbonate in similar doses will do as well, and may be used when creosote is not borne by the stomach. He has found them to reduce suppuration and fever considerably, improve nutrition, and help the patient greatly in cases which had passed the limits of surgical interference.

Professor Ramon Guiteras, in discussing Weber's remarks, said that the paper just presented was scientific as well as practical, and had the merit of presenting observations extending over a very long time. He had had very little experience with the iodides in chronic parenchymatous nephritis. Many of the old cases of Bright's disease seen by him at the City Hospital had improved very decidedly under the use of iodides, but he had ascribed it to a syphilitic element in them. A number of excellent authorities made the statement that the iodides were useful in all cases of Bright's disease. Senator, of Berlin, was one of the clinicians making this assertion. He states that it seems to act beneficially whether or not arterial sclerosis is present, and that it probably acts directly on the blood-vessels, on the inflammation itself, or upon the blood-pressure in the kidneys.

Referring to suppurative nephritis, or rather to pyelonephritis, dependent upon tuberculosis of the kidney, he said that the two drugs which had seemed to him to work best were creosote and guaiacol. Both of these seemed to have an antibacillary action, or at least seemed to limit the production of or neutralize the effects of the toxins produced by the tubercle bacilli. Under this benign influence the lesion in the kidney improved. In treating tuberculosis of the prostate, seminal vesicles, and bladder, he had obtained good results from creosote.

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### *THE TREATMENT OF DISEASES OF THE STOMACH.*

The *British Medical Journal* of October 29, 1898, contains the opening address on this topic delivered by HERSCHELL at the recent meeting of the British Medical Association. He thinks that the agents which are generally useful in the treatment of diseases of the stomach are: Electricity in its different forms; massage and mechanical therapeutics, such as movements, vibration; hydrotherapeutics, both as a means of improving the general health, and as a local treatment to the stomach in the form of lavage, spray, or douche; local treatment to the stomach by the gyromele of Turck. To these, he thinks, we must add drugs when used not for their influence upon the chemical processes of the stomach, but when administered for their tonic action on the muscular or nervous tissues of the body respectively.

First of all, as regards electricity: The author takes this first because it is a particularly happy example of a method of treatment with respect to which there is a difference of opinion. On the one hand, we have the evidence of many medical men of the greatest reliability who habitually use it in the treatment of atony of the stomach and allied conditions; and, on the other hand, we have a number of records of experiments made in the physiological laboratory where the operator could not succeed in producing contraction of the muscular substance of the stomach, whether the electricity was applied by the use of external electrodes or directly to the mucous membrane of the stomach. Hemmeter alone has apparently succeeded in demonstrating by his intragastric bag, fitted with double electrodes, that contraction of the stomach could be produced with electricity, but only with such a strong current that it would probably prove hurtful to the individual.

We have also on this side of the question a statement of Prof. Clifford Allbutt, who says: "Electricity may be found useful some day in atonic cases, but as yet I have seen no definite good from its use, whether internal or external; other physicians seem to have been more fortunate." A statement like this in a book which claims to be an authoritative

exposition of current medical views is much to be deplored; it must infallibly prevent many men from paying that attention to this valuable agent which it deserves. It also shows us how very important to the progress of medical science are exchanges of individual experience. Any one who will study the current literature of the treatment of diseases of the digestive organs must come to the conclusion that the clinical evidence in favor of the beneficial effects of electricity in atonic conditions of the gastrointestinal tract is overwhelming.

But all the laboratory experiments quoted must not be taken as conclusive. Many of the earlier ones were performed by medical men without that special experience of vivisection and the methods of the biological laboratory which alone can insure the absence of fallacies. And in this respect they unfortunately resemble a good deal of the so-called research work of the present day, which floods our journals with a host of crude theories and ill-digested facts. It is possible to reconcile this conflicting evidence if we assume that galvanism probably produces its undoubted good effects by acting not directly upon the muscular substance but upon the nerve supply of the stomach and intestines.

Having held this view for many years, Herschell has been in the habit of treating cases of atony of the stomach mainly by the application of the continuous current to the solar plexus and to the ganglia of the sympathetic and vagi of the neck. The application is made in the following manner: The patient is placed upon his back upon a couch, and the negative electrode applied to the nape of the neck, the anode being placed upon the epigastric region. Both electrodes are flat, flannel-covered plates, having each an area of twelve square inches, and remaining stationary during the application, which consists of from three to fifteen milliamperes passed for from five to ten minutes. The electrode is then removed from the nape of the neck, the rheophore attached to a three-inch disk electrode, the epigastric plate remaining in position. The current is then reversed, and the disk applied for one or two minutes in succession to each of the ganglia of the sympathetic in the neck, a current strength of one or two milliamperes only being employed.

This is a part of Herschell's routine method of treating atony of the stomach, and he has had no reason to complain of its want of efficacy. He very rarely uses the intragastric application of electricity, convinced as he is that it is not the application of galvanism to the ends of the nerves in the stomach that helps the patient, but the galvanization of the ganglia from which these nerves proceed.

Herschell took this opportunity of drawing attention to a special form of electric application which he has recently found to be very useful in the treatment of atony of the bowel and constipation. It is a primary coil, such as is constructed for giving faradic baths, and not only is wound with very thick wire, but is capable of giving very slow interruptions. It appears to really set up peristaltic action in the intestines. He has on several occasions seen its application cause an immediate stool. It also acts quite as efficiently as massage and muscular exercises in restoring tone to the abdominal muscles. In using it he places an indifferent electrode on the buttocks, and applies the other pole with a roller electrode over the abdominal muscles and over the intestines, following the curve of the colon, using interruptions of from 120 to 200 per minute. It has also given good results in cases of atony of the stomach.

The next agent which comes before our notice is massage and its congeners, gymnastic and other mechanical means.

Massage of the stomach is a mode of treatment which has its advocates and its opponents. Against it we have von Ziemssen and Rosenheim, whilst in its favor are, among others, Professors Ewald, Boas, Riegel, Zabludowsky, and Sceri. According to Hemmeter, it may be used:

1. On an empty stomach before breakfast to strengthen the muscular power of the stomach.

2. Three or four hours after a meal to assist in the expulsion of chyme, or to mechanically mix its contents.

According to the same author, it may be usefully employed:

1. In disturbance of the motor function depending on atony of the walls.

2. In stenosis of moderate degree.

3. In chronic gastritis with reduced secretion.

4. In gastroptosis.

5. In certain cases of nervous inhibition of the peristaltic movements.

Vibration of the stomach is a mode of treatment to which Herschell has paid a good deal of attention, and which he will describe in detail in a paper which he hopes to have an opportunity of reading shortly. Gymnastic exercises for strengthening the abdominal

muscles are chiefly useful in the treatment of gastroptosis.

In the treatment of the atony of the stomach, Herschell has on many occasions seen much benefit derived from douching the stomach alternately with hot and cold water. Although this can be done with the ordinary stomach-tube and funnel, it is much more convenient to make use of an apparatus which provides for the return of the liquid introduced into the stomach, and allows the lavage to be a continuous process. The best arrangement for this purpose is undoubtedly Turck's double-current stomach-tube, but an efficient substitute can be made by cementing together side by side two ordinary red-rubber stomach-tubes, one to conduct the fluid into the stomach, and the other to take it out again. It is a very important point to bear in mind that the afferent tube must be of smaller caliber than the efferent one, otherwise the risk is run of overdistending the stomach. In my own practice I connect the afferent tube with two separate reservoirs containing respectively water at 100° F. and cold water, by means of the two-way tap used by hair-dressers for shampooing. By this means one can effect the gradual change of the hot to the cold douche, and *vice versa*. Herschell usually gives a séance of ten minutes' duration, changing the temperature of the water every sixty seconds.

Professor Turck, of Chicago, has devised a very valuable improvement in the apparatus, by providing the end of the afferent tube with a bulbous extremity perforated with minute holes. By this means an introgastric spray is produced.

Under the head of dietetics we have several clinical problems of great interest. The first of these is the proper diet to be given to cases where the secretion of hydrochloric acid is in excess. We are here confronted with the following dilemma: A diet of proteids would theoretically appear to be indicated, since:

1. Meat and other albuminous substances are readily dissolved by the hydrochloric acid.

2. These articles of diet will combine to a greater extent with, and hold in combination more of, the free hydrochloric acid, thus diminishing gastric pain and irritation.

3. The diastatic action of the saliva will be inhibited almost as soon as starchy food reaches the stomach, instead of continuing for half an hour or so as in the normal stomach, and experiments have shown that this cannot again be perfectly revived in the alkaline duodenum. Therefore starch food must be almost useless to the organism.

Yet, if we put a patient on such a diet of proteids, although we bind a large quantity of free acid, we may possibly encourage its hypersecretion by the law that Nature when able responds to the demands made upon her. The continued call for hydrochloric acid to combine with and deal with the albuminous material upon which we are feeding the patient will certainly tend to hypertrophy the glandular elements of the gastric mucosa, and the last state of the stomach will be worse than the first. It is, therefore, more than probable, theoretically, that hyperchylia will be perpetuated by a proteid diet. The alternative will consist in the administration of a carbohydrate diet partially dextrinized, at the same time neutralizing the greater part of the hyperacidity of the stomach by large doses of alkalies.

The second great problem in practical dietetics is the subject of the administration of predigested foods, and with it may be profitably discussed the use of pepsin, pancreatin, and other digestive ferments. According to present ideas, it is quite superfluous to give peptonized albumins as long as the motor power of the stomach is normal, and as long as we are certain that duodenal digestion is unimpaired. Even when the power of the stomach of emptying itself into the duodenum has been lost, as in cases of pyloric stenosis, we shall probably be wasting our time in converting the food into peptone, since the investigations of Cahn have demonstrated that in these cases no peptone is absorbed from the stomach. In his own practice Herschell agrees with Hemmeter in confining the use of peptone and albumose to cases where the ordinary diet is found to be insufficient to preserve the nitrogenous equilibrium of the body.

Herschell does not think that pepsin by the mouth is ever indicated, nor can he conceive of any circumstance where it can do good, except as a local application to the gastric mucous membrane. In nearly all cases where pepsinogen is really absent, there is also such deficiency of hydrochloric acid that a sufficient quantity of the latter could not be given by the mouth to digest even a small meat meal when conjoined with the pepsin administered.

Pancreatin can only be given with advantage in the exceedingly rare cases where there is a complete absence of hydrochloric

acid in the stomach, as it is completely destroyed by normal gastric juice. But in these cases it is probably a doubtful benefit, since in order that the pancreatic digestion may take place in the stomach, we must provide an alkali such as bicarbonate of soda; and as the acidity of the gastric juice is undoubtedly one of the chief stimulants to the pancreatic and duodenal secretions, we may be very seriously affecting the digestion in the small intestines.

An important exception is to be found, however, in the taka-diastase. Professor Ewald has pointed out to us that deficiency in the amount of salivary ferments is a matter of extreme rarity, but circumstances not infrequently combine to prevent it from carrying out its work. It may be that by imperfect mastication, or owing to defective teeth, the flow of a proper amount of saliva is not excited, but by far the most frequent obstacle is the presence of an abnormal amount of hydrochloric acid in the stomach, such as we get in ulcer, hyperchlorhydria, and some other conditions. This, as we have already pointed out, inhibits the action of the salivary ferment, and consequently in these cases there will be indigestion of the starchy part of the food. By the administration of taka-diastase and alkalies we are enabled to give these patients a diet containing a large proportion of carbohydrates if we wish to do so.

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*THE TREATMENT OF MOTOR DEFICIENCIES OF THE STOMACH.*

In the *British Medical Journal* of October 29, 1898, EWALD of Berlin tells us that the only internal remedy for motor conditions at our command is strychnine. We can do something mechanically for the food stagnation in the stomach and for the muscular atony by lavage, stomach douches, and massage vibration and electricity. Where these remedies fail, nothing is left but gastroenterostomy, switching, so to speak, the stomach out of the digestive tract to a great extent. Ewald especially warns us under these circumstances against the too long continuance and too frequent employment of washing out of the stomach. Where lavage does good, it does so very soon; where it does no good, patients easily suffer in their general nutrition, and this may go on to symptoms of inanition, from the continued removal of a certain amount of material intended for nutrition.

A last point that we have to consider are the neuroses of the stomach, those dyspeptic, colic-like symptoms in the region of the stomach which are caused by a disturbance of the nervous apparatus of either local or central character, and only secondarily proceed from an affection of the glandular or muscle mechanism; this last being often of so slight a character that it completely escapes our diagnostic methods. Here may be classed nervous dyspepsia, nervous hyperemia of the stomach, the anomalies of secretion that rest on a nervous basis (hyperchlorhydria and hypochlorhydria), nervous vomiting and nervous crises (*crises gastriques*). The last, however, are mostly, though not always, caused by an affection of the central nervous system.

In these cases the treatment of the gastric condition, in so far as it is not purely symptomatic, consists in the treatment of the central nervous system. In neurotic cases the affection of the nervous system must be treated by general tonic and constitutional treatment. Only after this comes the question of treating the dyspeptic symptoms, though they seem to stand out so prominently. Here, indeed, it is often necessary, after one is sure of the good condition of the gastric functions, to prescribe a comparatively hearty and plenteous diet, despite the patient's objections to it. An example of this method of treatment is the "rest cure," as introduced by Weir Mitchell. It is, however, not sufficient in many cases. Ewald has often had patients in whom he succeeded in a short time in bringing about a considerable addition to their weight, but the dyspeptic symptoms remained unchanged. In such cases the gain in weight is not due to increase of muscle substance, but to a deposit of fat and to retention of water in the tissues. Only after such patients have had a thorough course of roborant treatment in the mountains or on the seacoast, or in a well situated sanatorium for dietetic and hydrotherapeutic treatment, does real improvement set in.

So much on the general principles that must be borne in mind in the treatment of stomach diseases. Ewald selects certain special features of the treatment of these conditions.

One of the most satisfactory affections to treat is ulcer of the stomach, provided, of course, that it be not too old, and that the ulcerative process has not already given rise to cicatricial contractions and adhesions. Way back in the thirties the treatment of ulcer of the stomach recommended by certain Eng-

lish authorities was the withdrawal, as far as possible, of all food by the mouth. Recently this so-called rest cure has become identified with the name of V. Leube. Since we have found that the nutrition of the organism, even though only for a limited time, may be carried out by nutritive enemata, we have been able to go a step farther with this treatment. Ewald treats patients in whom he suspects an ulcer of the stomach as follows:

The patient is confined absolutely to bed, and for the first five or six days receives as nourishment only nutritive enemata, which are given in the usual way three to four times a day. The thirst is combated by small ice pellets, the feeling of hunger by a few drops of a cocaine solution. It is remarkable, however, how slight these sensations are as a rule.

If the pains continue at the beginning, a small morphine injection in the stomach region gives the best results. As a rule this is not necessary, as the pains cease spontaneously as soon as the mechanical irritation of the ulcer stops. This point constitutes an excellent differential diagnostic symptom for nervous cardialgia and biliary colic, which often are deceitfully like ulcer of the stomach in their symptoms. Nervous gastric pains will by the withdrawal of food be not at all, or only for the moment, influenced—that is, so long as the suggestive effect of the novelty of the treatment continues.

After no food has been given by the stomach for three to five days, according to the subjective symptoms of the patient and the general condition, then a few test spoonfuls of some easily absorbable material are given. The simplest is a thin milk gruel of some meal or other—wheat, or oats, or mandamin, or one of the many artificial preparations. If this causes no pain, the next day more is given. After three or four days other easily digestible substances are added, but at first in a more or less liquid form. Then the consistency of the foodstuffs is increased and the nutritive enemata become fewer in number.

After the first trial, however, should pain occur, then exclusive feeding by the rectum must be resumed, and in some cases it may be kept up for ten to fourteen days. We cannot hope in such cases, however, to retain our patients in nutritional equilibrium for so long a time. A considerable loss of weight ensues, and Ewald has found by careful observations of organic metabolism that the body loses a considerable amount of nitrogen. This loss is, however, of little importance and is soon made up for, and the original body weight far outstripped when the patient is able to eat plentifully without pain.

This method of treatment should be carried out wherever it is possible. It gives such excellent and sure results that one can say that where it fails there must be complications present—old cicatrices, especially at the pylorus, perigastric adhesions—or else that some other affection, whose seat is perhaps not in the stomach at all, must be the cause of the pains.

Of the other methods of treatment—bismuth, argentum nitricum, iodine, iodide of potassium, orthoform, and so on—he says nothing.

The good results of the method described above occur, it is true, only in recent cases; older cases, with deeply burrowing ulcers, with prominent thickening of their edges, with stenosis of the pylorus, or other contractions, the hour-glass form and the like, can only be permanently relieved by operative measures, though the setting the stomach at rest causes passing relief from pain. It is, of course, understood when surgical relief is sought that the conditions must be favorable—that is, that the ulcer must be situated where the surgeon can get at it and treat any sequelæ that may result from its excision.

As to the indications for surgical interference, they were discussed at the last Surgical Congress in Berlin. Ewald's own experience justifies him in accepting Leube's indications in this matter; they are as follows:

In gastric hemorrhage, if the bleeding continues or occurs repeatedly and resists treatment.

When internal medication fails to relieve severe pain, and persistent vomiting and inanition are setting in.

In perigastritis and abscess in the neighborhood of the stomach (subphrenic abscess).

In perforation into the abdominal cavity as soon as the patient is able to stand the operation.

There are a series of successful operations for perforated gastric ulcers in the literature. Out of six cases of gastroenterostomy operated on by Ewald's advice for ulcer of the stomach and its consequences (stenosis of the pylorus, hour-glass stomach, perigastritis), only one died, a mortality of 16.6 per cent; in cases of gastrectomy for ulcer also but one death, a mortality of 14.3 per cent. Meanwhile, it must not be forgotten that any

operation upon the stomach is a serious one, and that a number of favorable circumstances must not combine in order to assure successful results. Especially in bleeding from the stomach is the question of operative interference hard to decide, and the selection of the time for it difficult. On the one hand, even severe hemorrhage may cease suddenly; on the other, the finding of the bleeding vessel in the stomach is often extremely difficult and requires specially favorable conditions. In desperate cases of gastric hemorrhage, in which ordinary internal remedies such as ergot, morphine, chloride of iron, etc., do no good, Ewald has often seen prompt cessation of the bleeding after lavage of the stomach with ice water. This not only removes the decomposing irritant blood-clots that have gathered, but has a direct contractile effect upon the blood-vessels and favors thrombus formation. It is best to carry out the lavage after previous cocainization or after a small injection of morphine, so as to forestall tendency to vomit.

Out of the large chapter of neuroses of the stomach Ewald selects but one group—nervous gastrosuccorrhea, nervous gastric hypersecretion. It has nothing to do with the hyperchlorhydria of gastric ulcer, or with the stagnation of superacid stomach contents in atonic processes or in stenosis of the pylorus, though it is often confused with these. There is question in it of a stomach not increased in size, at a time when digestion is not in progress, especially during the night, secreting an excessive amount of gastric juice. This gastric juice may be normal, or contain too much HCl, but it is always, and this is what is characteristic of it, free from stagnation products—that is, from remains more or less of preceding meals. There is found in such cases in the stomachs of fasting patients a clear or but slightly cloudy fluid, of considerable amount, which has all the properties of normal gastric juice. This fluid irritates the gastric mucous membrane and causes severe pain, which at times wakes the patients from sleep. These pains diminish or disappear if the patient takes food, and so neutralizes the acidity of the secretion. After awhile these pains recur, and so have a certain similarity with the pains in ulcer of the stomach, from which, however, they may be differentiated by the fact that they occur at a time when the stomach is normally empty. Patients get the idea that the affection may be cured by a rigid dietary; they eat little, they sleep badly, other nervous symptoms set in, and they run down in health. Should the diagnosis of ulcer of the stomach be made the treatment Ewald has described above will of course be unsuccessful. The diagnosis can be made with assurance from the finding of a large amount of normal gastric juice in a fasting stomach, when, at the same time, all symptoms that point to stenosis or dilatation of the stomach or to gastric ulcer are absent.

The treatment of this condition is, like that of all neuroses, twofold: First, tonic and hygienic regulations for the general condition, hydrotherapy and climatotherapy. Secondly, symptomatic treatment of the stomach. The ordinary so-called sedatives—the bromides, zinc, belladonna, codeine, morphine, hyoscyamus—are all of no use, Ewald asserts from a vast personal experience. His best results have come from regular evacuation of the fasting stomach, and a spraying immediately afterwards of the gastric mucous membrane with a half-per-cent solution of $AgNO_3$. Whether we accomplish this spraying by simply allowing the solution to flow in, or by means of the stomach douche or Einhorn's stomach spray, is a matter of indifference. During the day he gives the patient every two hours a teaspoonful of a five-per-cent solution of potassium iodide and bicarbonate of sodium, and allows only rectal alimentation, in order to avoid all irritation of the gastric mucous membrane. Even this method is not always successful, and does not guarantee against relapses, but it is the most efficient in his experience.

One of the most serious of the neuroses is hysterical vomiting. Cases occur in which for weeks every attempt to nourish the patient fails. Every bit of solid or liquid food will be immediately vomited, and rectal enemata, despite the addition of opium, will be at once ejected, or if retained do not serve in the least to make the stomach more tolerant of food. The patients get worse and worse; they emaciate to skeletons, and are unable to hold themselves upright. The condition seems to depend on a cramp of the pylorus, and nothing remains but to do a gastroenterostomy. Ewald has had the operation done in one case recently. The stomach seemed to external appearances perfectly normal. The success of the operation was excellent; vomiting ceased immediately thereafter, and the patient, a woman of twenty-three, gained five pounds in weight in the subsequent three weeks.

But the diagnosis is not always so easy, nor the success so assured, as in this case. In a similar case of vomiting and pain in the practice of a colleague, the diagnosis, because of a falsely constructed Roentgen photograph, was set down as cancer. Ewald disagreed with this opinion. There was no tumor palpable, no cancer cachexia, no glandular enlargements to be found, while there was an excess of free HCl. He preferred to think that the forty years-old female patient was suffering from an old ulcer, with adhesion. As the pain was severe and strength rapidly being exhausted, the patient begged to be operated upon. The laparotomy showed nothing abnormal in the stomach, and the organ was not opened; there were no pathological changes around it. After the operation the patient was for a time free from all symptoms, but after a while they recurred, and permitted them to make with assurance the diagnosis of a neurosis, especially as in the meantime certain unmistakable hysterical stigmata had developed.

In conclusion, Ewald said a few words as regards the success of surgery of the stomach in the matter of malignant disease of the organ.

The surgery of the stomach was taken up very hopefully, because of the confidence inspired by the improvement in surgical technique. It was hoped that if the operation were undertaken early the chances of success would be greatly increased, and so great stress was laid on such diagnostic methods as it was thought would make very early operation possible. It seemed for a time, according to Boas's investigations, that the presence of lactic acid would furnish the desired criterion, but the hopes thus raised were rudely shattered. Lactic acid is as little specifically characteristic of cancer as the absence of HCl. That in many cases of gastric cancer lactic acid was to be found in the contents of the stomach was known to Ewald and others long before Boas's publication, but they were more prudent in drawing their conclusions. Nevertheless, Boas has the merit of being the first to lay emphasis upon this fact. The formation of lactic acid is a chemical process that takes place whenever defective HCl secretion and stagnation of the stomach contents occur. This is frequently the case in gastric cancer, but may occur in other affections. Lactic acid only occurs in cases of cancer of the stomach after serious alterations of digestion have set in, and usually a palpable tumor is present.

At present, then, quite as much as ever before, the demonstration of a tumor of the stomach, its position, its size, and its movability, are the indications for operation. If we operate more and earlier now than before, it is, as Ewald showed last year at the International Medical Congress in Moscow, not so much because our methods of diagnosis are more refined and allow of earlier diagnosis, but because of confidence in our technique we make up our minds for operation much earlier than before.

At Moscow Ewald gave the statistics of cases operated on in his hospital from 1894 to 1897—two and a half years. There were 25 gastroenterostomies with 16 deaths (64 per cent); 12 resections with 9 deaths (75 per cent); 22 gastrostomies with 12 deaths (54.5 per cent). In the last year there have been twenty more cases—11 gastroenterostomies, 5 resections, and 4 gastrostomies. Mortality respectively 64.7 per cent, 62 per cent, and 50 per cent.

In six cases after the opening of the abdomen the operation was abandoned because of extensive cancerous degeneration of the stomach and its neighborhood, although only such cases are referred to the surgeon as after careful investigation promise to give favorable conditions and results.

On the whole the results were better in women than in men, and cancers that had developed from ulcers were found more favorable for operation than others. One reason for this, certainly in Germany at least, is that among women there is very seldom an abuse of spirituous liquors; and a second reason is that cancer developed on the basis of an ulcer does not give rise so soon to the cancer cachexia as idiopathic carcinomata. In other words, there is a possibility of radical cure in about twenty-five to at most thirty per cent, and of palliative successful measures in about fifty per cent, of the cases that after careful investigation the doctor considers suitable for operation. This not very encouraging state of affairs is due to the nature of the affection, and cannot be laid at the surgeon's door.

In Ewald's opinion surgical technique has at present practically reached its limit, and its marvelous success in the treatment of non-malignant neoplasms is the best proof of this. If we have no better results to report, then it is due to the nature of things. The impossibility of diagnosing cancer early enough, its tendency at times to diffuse involvement of a large amount of tissue, the

insidious toxic effects of its metabolism upon the organism by which the patient's resistant vitality for operative procedures is notably lessened—all these combine to set limits to the supremest surgical skill.

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*ERGOT IN CHRONIC MALARIA.*

JACOBI, of New York, thus concludes a paper on this topic in the *Medical News* of October 22, 1898:

There are cases of chronic intermittent fevers with large tumefaction of the spleen that, after having resisted the action of quinine, arsenic, methylene blue, eucalyptus, and piperin, are benefited by ergot.

When enlargement of the spleen is not old and not firmly established the contracting effect of ergot is noticed within a reasonable time.

The attack will disappear before the diminution in the size of the spleen is very marked.

Though temperatures after the employment of ergot remain irregular and now and then somewhat elevated, chills, as a rule, are not noticed with this elevation.

Plasmodia do not seem to disappear from the blood so rapidly as they do after quinine, when the latter is effective. But even while some are still present, the attacks being more or less under control, the patient will feel better.

Complicating local pain requires additional treatment with ice, or cold douches, or heat; chronic hyperplasia demands iodide of potassium or iodide of iron. Digestive disorders may indicate, as they often do, when quinine is expected to act, before the employment of ergot, an emetic, or a purgative, or stomachics.

An experience extending over forty years, in which he has used ergot in many instances, justifies the writer in asserting at least this much: that there are many cases of chronic malaria, apparently intractable, that will get well with ergot.

There are cases, occasionally, in which the return of elevations of temperature after the successful use of ergot makes the combination of ergot and quinine, or ergot and arsenic, advisable, though quinine and arsenic had not been successful previously.

Ergot, like quinine, probably by its sudden contracting effect on the spleen, and by the forcing of large quantities of plasmodia-laden blood into the circulation, is, in chronic malaria when hydremia and spleen tumor are excessive, capable of bringing on the very first attack of chills and fever.

Recent cases of malaria have got better or were improved under the extensive use of ergot, but many resisted a long time; that is why acute cases should rather be treated with quinine.

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*THE PHARMACOLOGIC ASSAY OF THE HEART TONICS.*

In a recent issue of the *Journal of the American Medical Association* HOUGHTON writes a suggestive paper on this most important topic. It is unnecessary for him to call attention to the great therapeutic importance of the heart tonics, since digitalis, strophanthus, and others of the group are not universally employed by physicians in their daily practice. It is his purpose to point out some of the dangers attending the administration of these drugs, and to offer some suggestions in regard to the selection of the crude drugs and the processes of their manufacture, in order that the danger may be as far as possible circumscribed.

We are not generally accustomed to think of the heart tonics as being the most poisonous remedies employed in therapeutics; yet it is true. According to some of the best authorities the maximum dose of extract of digitalis is about one-half as great as the maximum dose of extract of belladonna; while strophanthin, the active principle of strophanthus, is three times as poisonous as atropine, ten times as poisonous as strychnine, and twelve times as poisonous as absolute hydrocyanic acid.

It would be considered dangerous pharmaceutical practice to allow preparations containing atropine, strychnine, or hydrocyanic acid to be sold, without first being subjected to careful chemical assay and standardization. The United States and other pharmacopœias give elaborate methods for the exact quantitative determination of these constituents; while owing to the fact that the contained active principles of the heart tonics are glucosides, so easily decomposed by chemical manipulation that an assay cannot be made, no directions whatever are given for the determination of the physiologically active principles of the galenical preparations, and the tests for the purity of the respective glucosides are of little value. Crude digitalis, strophanthus, etc., may be mixed to a greater or less extent with foreign material or inferior drugs when they come into the hands of the pharmacist or manufacturing chemist. By careful botanic

examination the adulterating substance can be detected, and the advisability of garbling or rejecting the lot will depend upon the extent of the impurities. Comparatively little difficulty is experienced in obtaining supplies of digitalis suitable for manufacturing purposes, since this drug is collected in civilized countries. With strophanthus seeds, however, which are imported from savage Africa, much difficulty is experienced.

In order to keep the length of this paper within reasonable limits the writer speaks mainly of the latter drug, its active constituent, strophanthin, and its pharmaceutical preparations. These will serve as types showing the proposed method of assay. About thirty varieties of strophanthus have been discovered. It is claimed that only six of these varieties contain strophanthin, while a few contain the still more active glucoside, ouabain. Holmes, of London, claims that some of the strophanthus found on the British market contains the seed of other plants. In America, however, the crude drug generally consists of a mixture in varying proportions of *Strophanthus Kombe* and *Strophanthus hispidus*. Opinions vary greatly regarding these, some authorities claiming that they are distinct species, while others believe they are merely varieties of the same thing. Preference is generally given to *Strophanthus Kombe*, since it contains about 0.95 per cent strophanthin, while *Strophanthus hispidus* contains only about two-thirds as much. The amount of contained strophanthin is partly dependent upon climatic conditions. It is a well known fact that the physiological activity of digitalis leaves varies within wide limits from year to year.

Strophanthin, having the formula $C_{21}H_{48}O_{12}$ (Arnaud), is believed to be the only active constituent of *Strophanthus hispidus* and *Strophanthus Kombe*. Some investigators, however, claim that strophanthidin also is found. Fraser and others oppose this view, believing that strophanthidin is merely a decomposition product of strophanthin. Strophanthin, like other glucosides, is easily decomposed by acids. It is readily soluble in water and alcohol, but almost insoluble in ether and chloroform. Pure or impure strophanthin, or pharmaceutic preparations containing the glucoside, when brought in contact with sulphuric acid, a trace of ferric chloride being present, yield a bright green color. This reaction is not conclusive, however, since ouabain cannot be recognized in the presence of strophanthin. Holmes, who has given this point much attention, claims that only by purchasing the seeds in the follicle and testing a seed from each follicle can a reliable preparation of strophanthus be made. An assay based on the amount of extractive contained in a given tincture of strophanthus, or other preparations of the heart tonics, is of little value to the physician, since the extractives consist largely of chlorophyll and other inert substances.

After a careful consideration of the difficulties preventing a chemical assay of the heart tonics, and of the great importance to the medical profession of some means of standardizing them, Houghton decided to experiment on living animals, believing that data might be obtained whereby the physiologic activity of the crude drug, its pharmaceutical preparations, and active constituents might be ascertained. Since it could not be taken for granted that every sample of strophanthus seeds or digitalis found on the market was active, it seemed best to adopt methods for determining, first of all, whether the specific action of the heart tonics was manifested by the sample of drug; and secondly, to find methods for standardizing them.

Very extensive pharmacological researches have shown that the several heart tonics act in much the same manner, differing mainly in degree, upon the factors concerned in the maintenance of the circulation of the blood. The most important phenomena observed are slowing and strengthening of the heart-beats and increased blood-pressure. The writer believes only two series of experiments are necessary in order to show whether a given sample of drug possesses the specific action desired, viz., the application of a solution of the crude drug or active constituent to the laid-bare frog's heart, noting the slowed rhythm, the less and less perfect diastole, increased systole, and finally, systolic standstill of the ventricle; and the intravenous injection of such solutions into dogs or rabbits, observing the variations in blood-pressure and heart-beats, as shown by graphic tracings recorded on the kymograph. Other reactions might be obtained in addition, but are not necessary. The physiological activity of each sample of drug examined should be compared with a standard sample of known strength.

A quantitative estimate by pharmacological methods of the activity of the heart tonics is a much more difficult problem than is a qualitative assay. Many series of experi-

ments were necessary in order to decide what methods were best suited for this work. Too great variation was exhibited in the results obtained from blood-pressure experiments on dogs, rabbits, etc., and such experiments are, moreover, quite complicated and difficult to carry out. The writer found that fairly accurate data could be obtained from the application of a solution containing strophanthin, digitalin, etc., to the laid-bare frog's heart, comparing the action of the drug thus tested with that of a sample of known strength. This method, however, was finally abandoned for a simpler one, which gives much better results. It seemed to him quite probable that the strength of the heart tonics could be determined from their killing power when administered to the lower animals. Accordingly, rabbits, guinea-pigs, rats, frogs, etc., were employed for determining the minimum fatal dose of the drug. He finally chose frogs as being best adapted for this purpose. Different species of frogs vary considerably in reaction to the poisons, but the same species behave much alike. He has found it best to employ frogs of a nearly uniform size for the standardization of any particular tonic. Since it is impossible to obtain on the market frogs of exactly the same size, it is best when one has a large number of samples to standardize to have the frogs separated into lots by weight, those in each lot not varying over three grammes; then he can use those weighing 10 to 13 grammes for strophanthin, those weighing 14 to 17 grammes for tincture strophanthus, those of 18 to 21 grammes for tincture digitalis, etc. Frogs weighing less than 30 grammes can be obtained at a very reasonable price from fishermen, as they are too small for the table. However, it is necessary that from the moment of capture they be handled with great care and kept in wet moss, etc., until they arrive at the laboratory, when they should be at once transferred to suitable ponds.

The method of administering the poisons and observing results may be briefly stated as follows: Dissolve the strophanthin, or tincture of strophanthus, in normal saline solution. The strength of the medicated solution should be such that the total quantity to be injected shall not exceed 0.5 cubic centimeter. The fluid should be measured by means of very slender pipettes, graduated into hundredths, into round-bottomed capsules of about one cubic centimeter capacity, from which the last drop may be taken up in a narrow pipette having a long slender point, and the injection then made through the frog's mouth into the abdominal lymph sac. Great care should be taken not to puncture the skin, as this will allow a portion of the injected fluid to leak out. After injection the frogs should be placed in wide-mouthed frog glasses, the plates containing about a quarter of an inch of water. It will be necessary to inject several series of about five frogs each for each sample of the drug to be assayed, a first series to be injected with drug of known standard strength. After testing a large number of tinctures of strophanthus Houghton found that 0.00015 cubic centimeters per gramme body weight represented fairly well the toxic activities of an average sample of tincture prepared from *Strophanthus Kombe*.

The minimum fatal dose of tincture of strophanthus prepared from various lots of drug obtained from the American market was found to be as follows:

| | | | |
|---|---|---|---|
| 1 | .00015 | 8 | .00015 |
| 2 | .00026 | 9 | .00022 |
| 3 | .00015 | 10 | .00017 |
| 4 | .00012 | 11 | .00016 |
| 5 | .00013 | 12 | .00015 |
| 6 | .00015 | 13 | .00025 |
| 7 | .00010 | 14 | .00033 |

The several tinctures were prepared by one process and with the same menstruum.

The second series are to be injected with doses varying considerably in size. The third series are to be injected after the approximate dose of poison has been found from the second series. From the third series we may almost surely fix the minimum dose. A fourth series should finally be injected, which will fix the limits of strength very closely. The minimum fatal dose should kill at least three frogs out of five. If a less number die it is best to inject another series with doses one point greater.

One very important advantage of the method above outlined for the assay of the heart tonics is the fact that various kinds and sizes of frogs may be employed at any season of the year, the only essential being that at the time the assay is made the standard and unstandardized preparations should be tested at the same time, the frogs being of exactly the same species and kept under exactly the same conditions, comparative results only being necessary, since the standard solution maintains its activity almost entirely unimpaired, as shown by tables III A and III B.

A standard tincture of strophanthus retains its strength very well, as shown by the follow-

ing tests, made on the first standard tincture the writer employed:

| Table III A. | Minimum fatal dose. |
|---|---|
| July 6, 1897 | .00015 |
| Oct. 19, 1897 | .00015+ |
| Dec. 23, 1897 | .00015 |
| Feb. 23, 1898 | .00015— |
| April 25, 1898 | .00015 |

The loss in strength was so little in nearly one year that it came within the limits of error. Similar results are observed in regard to the permanence of a concentrated tincture of strophanthus.

| Table III B. | Minimum fatal dose. |
|---|---|
| July 28, 1897 | .0000037 |
| Nov. 10, 1897 | .0000037 |

The ease with which we may always keep on hand a standard preparation of the heart tonics greatly facilitates the carrying out of the test and the accuracy of the results as compared with those obtainable with diphtheria toxin or antitoxin, both of which latter lose their active properties in a comparatively short time.

| Table IV. | Minimum fatal dose. |
|---|---|
| Strophanthin No. 1 | .000009 |
| Strophanthin No. 2 | .000001 |
| Strophanthin No. 3 | .000001 |
| Strophanthin No. 4 | .00000062 |
| Strophanthin No. 5 | .0000001 |
| Strophanthin No. 6 | .0000001- |

The foregoing table shows the variation in the strength of different samples of strophanthin which were obtained from three of the best manufacturing chemists in the world. They were supposed to be pure strophanthin, yet one sample is ninety times as strong as another, the others varying between these limits. The digitalins also vary greatly in strength, but much less than strophanthin. Both strophanthin and digitalin are given daily in tablet or pill form, the amount of active ingredients being apportioned by weight. A splendid opportunity is thus provided for a sudden termination of a favorably progressing heart disease, should the patient be obliged to have his prescription refilled from a fresh bottle. The only way that such remedies can be taken with any degree of safety is to have them prepared from a stock of known physiological strength. Houghton does not dwell upon this subject too long, but desires to say in conclusion that the method of assay herein described is put forth in the hope that others will experiment along this line. He does not claim it is the best method of pharmacological assay that may be devised for this group of therapeutic agents, since he has not yet satisfied himself that it is applicable to every one of the members of the group, but he does claim that some method of assay should be employed.

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### *THE USE OF SALINE ENEMAS IN TYPHOID FEVER.*

The *Lehigh Valley Medical Magazine* for December, 1898, contains an article by WALKER, from which he thinks the following statements may be drawn:

1. For the relief of the constipation and abdominal distention of typhoid fever, the daily saline enema is the most generally useful measure that we have.

2. The irritative diarrhea present in some cases is greatly benefited by a daily enema.

3. The effect of the ulcerative process is good, and the likelihood of hemorrhage diminished by promoting cleanliness of the intestinal tract.

4. Cases receiving a daily enema are less likely to develop serious nervous symptoms.

5. The daily enema insures a certain amount of the saline solution being absorbed, thereby relieving thirst, improving the circulation, and encouraging urinary excretion.

6. In cases of stubborn hyperpyrexia the cool enema may assist in controlling temperature.

7. In relieving restlessness and promoting the comfort of the patient, the enema often acts very happily.

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### *VARIX: ITS CAUSES AND TREATMENT, WITH ESPECIAL REFERENCE TO THROMBOSIS.*

In *The Lancet* of October 15, 1898, BENNETT publishes a valuable address entitled as above.

For practical purposes, so far as their causation is concerned, varicose veins may be divided into four classes: (1) those which are congenital; (2) those due to obstruction of blood-current; (3) those caused by strain without thrombosis (traumatic); and (4) those the result of thrombosis.

The congenital cases form a large percentage of those usually met with and consist of two varieties: (*a*) those connected with the subcutaneous veins only, and (*b*) those having a direct and gross communication with the deep venous trunks. The second of these varieties is by far the more important.

As an example of the first variety, the local mass of varix often seen in the calf of the leg may be mentioned, and of the second

kind the convoluted collection of varicose veins about the inner side of the knee, which, turning toward the middle of the popliteal region, ends in a large vessel which joins the deep vein directly by passing through the normal opening in the fascia over the popliteal space.

A third variety of congenital varix is that in which the whole venous apparatus of a limb is overdeveloped, with or without corresponding increase in size of the main artery. Such cases vary in degree from what is nothing more than a little exaggeration in the size of the vessels to a morbid condition which may, without inaccuracy, be termed diffused nævus. Congenital varix is sometimes very extensive.

There is no doubt that the veins of persons who when young are subjected to abnormal and especially sudden strain, such as may occur in hard "training," in gymnastics, particularly the lifting of heavy weights, or in any violent exercise, as, for example, heavy football playing, tend to become varicose more than the veins of persons whose occupations or amusements throw less strain upon the vascular apparatus. In proportion to the strength of the individual the greater will be the tendency to the development of varicosity. The immediate cause in cases of this kind is the giving way of the vein valves, usually the proximal pair, which under condition of great general tension naturally have to bear the greatest pressure, although they are not infrequently imperfect anatomically.

The effect of thrombosis of the large venous trunks, such, for example, as the iliac vein or inferior vena cava, especially as a complication of enteric fever, in the production of general varicosity of the limb below, is too familiar to call for comment. The importance, however, of thrombosis as a factor in the causation of a certain type of varicosity in the leg is not commonly recognized, nor is Bennett aware of any mention of the matter in surgical literature.

Strains and other similar injuries of the leg or ankle followed by pain and acute tenderness down the middle of the calf, sometimes insufficient to cause more than momentary or very transient trouble, but at times enough to render the limb practically useless for a considerable period, are not infrequently followed very soon by dilatation of the saphena veins, which, if more than very temporary, passes subsequently onwards to tortuosity, with the development of characteristic varix which rarely extends above the knee, terminating generally at the point at which the great saphena of the thigh is completed by the junction of the two trunks at the upper end of the leg. The cause of this development is thrombosis of the main deep veins—*i.e.*, the venæ comites of the posterior tibial artery, etc. The primary saphenal dilatation is merely the result of the establishment of the collateral circulation. If the thrombosis clears up, or if the unaffected deep veins take up the collateral function, this dilatation is temporary only and soon disappears. If, on the other hand, as not infrequently happens, the thrombosis leads to occlusion of the deep channels, the superficial dilatation remains permanent and sooner or later a state of ordinary acquired varicosity of the leg follows, which extends, as a rule, no higher than the junction of the two branches already mentioned, and which completes the formation of the femoral saphena, as at this point the blood-current becomes so free that no appreciable change is produced higher up. The clinical importance of these cases is considerable and lies rather in the history of the cases than in the local symptoms.

For practical purposes the only immediate dangers to life arising from varicose veins are: (1) the occurrence of profuse bleeding from the "bursting" of a thinned vein; and (2) the formation of thrombus, which may either rapidly extend to the great venous channels or lead to the detachment of emboli, which if large enough may cause immediate death, or if they pass through the heart may lodge in the lungs, giving rise to pulmonary lesions which are sometimes fatal.

There is no doubt that so far as the limb below the knee is concerned, in the absence of very gross neglect, results serious to life rarely follow immediately from thrombus in varix. In the thigh and at the knee, however, the matter is altogether different, since a recent clot in a varicose vein in those regions is always a serious and sometimes a fatal lesion; in certain types of varix the gravity of thrombus cannot be overestimated.

The local conditions predisposing to thrombosis in varix are: (*a*) cysts or acute bends in greatly dilated vessels; (*b*) peculiarity of situation with regard to mobility; and (*c*) liability to injury. Now traumatic thrombus in varix almost invariably begins either in cysts, cystic dilatations, or in the acute bends of very tortuous and greatly dilated vessels. In situations in which the affected veins,

especially if very large, are continually subject to mobility—*e.g.*, alternate bending and straightening — thrombus is prone to form. The effect of traumatism as a cause of thrombosis is too familiar to require comment.

The tendency of thrombosis in varix to spread and invade the great deep venous channels increases with the size of the vein, the absence or inadequacy of the vein valves, and especially with the existence of a gross lateral communication between the part in which the clotting occurs and the main deep venous channel nearest in relation to it. The liability to embolism will of necessity be increased by the same condition; upon these conditions, therefore, may be said to depend the gravity of thrombosis in varix. Of the constitutional states predisposing to thrombosis it is unnecessary to speak; they act in the same way, but with more force, in varix as they do under normal local conditions.

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*SOME DETAILS IN POSTERIOR GASTRO-ENTEROSTOMY.*

BARKER (*The Lancet*, Nov. 12, 1898) calls attention to the fact that some operators of large experience who in the past have done many anterior gastroenterostomies are now giving it up in favor of the posterior method. And one, Professor Carle, of Turin, writing at the beginning of this year, claims to have done his last twenty-three posterior gastroenterostomies consecutively without a death, and puts his gross mortality at 3.8 per cent for non-malignant cases. It may be objected to this series that it only contains non-malignant and consequently less severe cases. But, on the other hand, it probably gives a better idea of the intrinsic risks of gastroenterostomy *per se* than one including malignant cases, many of them probably operated on in the last stages of an exhausting disease.

It is hardly ever necessary to make in the first instance an opening in the muscular wall of more than two inches. The skin wound may be double that length. But with one or two fingers in the abdomen the stomach can in most cases be explored adequately, and during this exploration there is a minimum of exposure of the viscera and very little chance of prolapse of bowel.

Barker then mentions two modifications of the usual operation which he finds save time and a good deal of unnecessary manipulation of the field of operation. Although disclaiming wholesale belief in the use of Murphy's button, he thinks that in this particular case of posterior gastroenterostomy it has great advantages. Its use certainly makes an operation, which without it is very difficult and tedious, comparatively easy and short. Besides, some of the objections to its use in the anterior operation have less weight in the posterior. Two drawbacks to the use of the button in the anterior operation occur at once to any surgeon who has done many of these operations. One is the probability that the button will fall back into the stomach rather than pass into the bowel. This has been known to occur in several cases. It can be explained both by the weight of the metal body tending to drag it back from its position in the anterior wall of the stomach into the cavity of the viscus, and from the narrowing of the jejunum due to the dragging of the colon preventing the button from passing into the gut. But when the button is placed in the posterior wall of the stomach behind the colon and in the jejunum behind the latter, where it does not kink, the contractions of the stomach and gravity both tend to carry it into the gut, which is at its greatest size and in no way displaced.

Again, two small details in the method of applying the button in the posterior operation which Barker has observed in his last two gastroenterostomies materially shorten the procedure and further minimize the chance of the button falling into the stomach. The first is Professor Carle's method of closing each viscus round the central tube of the button, which differs materially from that recommended by Dr. Murphy. The incision in each viscus was made only just large enough to get the button in. Then, instead of the usual purse-string suture round the edges of the opening to close it on the central tube, Professor Carle simply puts a stitch at each end of the slit by Lembert's method and so reduces it. This saves much time and is equally effectual. It also saves much handling and dragging of the parts.

The next point is a departure from von Hacker's procedure in his operation. He recommends that when the stomach has been reached through a slit made in the transverse mesocolon it should be secured there by stitches before being made to anastomose with the jejunum. The author believes that this stitching may be dispensed with altogether when the button is used. That this will save much time is obvious. In Barker's last case the operation had lasted seventeen minutes before this stage had been completed, the whole procedure lasting thirty-six

minutes. From what he has seen in the last two cases he has operated on he believes that all that is necessary is to make a small hole in the mesocolon and draw the posterior wall of the stomach through it to a sufficient extent to give room for the insertion of the metal button. When the latter has been placed in position it will prevent the stomach from slipping back through the slit in the mesocolon, and there will therefore be no reason for stitching the latter to the stomach. There might be some fear perhaps that the funnel of the stomach wall thus made might be strangulated by the edges of the hole in the mesocolon, did we not know that under similar conditions where the stomach is drawn out through small apertures, as in the most recent operations for gastrostomy, no strangulation takes place. In his first posterior gastroenterostomy, though the stomach wall was tightly grasped by the hole behind the button, no evil result followed, and the button was passed on the fourteenth day, the patient making a perfect recovery. In his last case of the posterior operation done with the same button he stitched the stomach to the mesocolon. But though the patient made an uneventful recovery and the button was passed on the twelfth day, he could see that he had lost at least ten minutes in putting in stitches in a very inaccessible part which might have been avoided. Everything which gets rid of the necessity of stitching within the abdomen appears to deserve very careful consideration as a means of saving time and the irritation of manipulation.

In conclusion, Barker says he was struck with the very small amount of general disturbance produced by the posterior operations as contrasted with a much larger number of anterior gastroenterostomies which he has done.

Barker then details two operations in which he employed the above method.

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### *A SERIES OF CASES OF CHOLEDOCHOTOMY, INCLUDING THREE OF DUODENOCHOLEDOCHOTOMY.*

MAYO ROBSON publishes a contribution on this subject in the *British Medical Journal* of November 5, 1898, in which he states that in operating on the gall-bladder and bile-ducts it is better to begin with an open mind, prepared for any of the various operations on the biliary passages, as it is as a rule quite impossible to say what will be required until the ducts have been explored by the fingers and the condition of the parts ascertained. Although Courvoisier states that gall-stones are found in the common duct in four per cent of all cases, "which possibly may be correct from a post-mortem point of view, or if all cases of cholelithiasis with only slight symptoms are taken into account," from the surgeon's point of view he thinks twenty per cent will not be too high an estimate, and this is easily accounted for by the fact that it is only in the cases producing serious symptoms where the opinion of the surgeon is sought. Seeing, then, that one case in every five of gall-stones may probably require some operation on the common duct, it is worth while considering what means are at our disposal.

In a few cases concretions may be manipulated backward into the cystic duct, and thence extracted by scoop or forceps, but it is seldom practicable on account of the contraction of the gall-bladder and cystic duct. The writer has adopted this method successfully on two occasions, but in both cases the cystic duct was also dilated and occupied by concretions.

Occasionally a small stone may be pressed into the duodenum, but this is exceptional and not generally to be recommended, as not infrequently it may be pushed into a dilated diverticulum of Vater, and so be missed, and the whole operation rendered futile.

Cholecystotomy, with subsequent treatment of the obstruction by solvent injections of olive oil or soap solution, is well worth bearing in mind on account of its simplicity and safety, together with the certainty of giving immediate relief with a modicum of risk, and putting the patient in better condition for subsequent treatment should such be necessary. It is of special value in patients too ill to bear a prolonged operation.

Cholelithotrity, or crushing the stones *in situ* where the concretions are sufficiently soft to yield to the pressure of the finger and thumb, is a method of treatment that Robson has followed on thirty occasions with marked success and without a death; it is especially applicable to cases where the common duct is difficult to reach, as in very stout subjects, or where it is desirable to avoid prolonging the operation. It is only available in the case of soft concretions, and may have to be supplemented by injecting the ducts with a solvent solution.

Needling concretions through the duct walls, recommended by certain operators, is not unattended by danger, as the damage to

the walls of the ducts may lead to subsequent trouble. It is of no avail for soft stones, and uncertain in the case of hard concretions.

Cholecystenterostomy, or short-circuiting the obstruction, may be adopted where the patient is too ill to bear a prolonged operation, but it is by no means an ideal operation, as it leaves the obstruction untouched. Moreover, since in gall-stone obstruction the gall-bladder is usually contracted, in the greater number of cases, cholecystenterostomy is not available. The writer has performed the operation thirteen times altogether, but only seven times for gall-stones in the common duct. He lost one patient, who was at the time extremely ill with suppurative cholangioitis and deep jaundice of long duration.

Choledochenterostomy, or uniting the dilated cystic or common duct to the duodenum, in cases of largely dilated ducts with contraction of the gall-bladder, may be called for on rare occasions. The writer has twice done it, and both patients recovered.

Choledochostomy, or attaching the dilated duct to the surface and draining it, is so frequently associated with infection of the ducts in the liver that in nearly all the cases reported a fatal result has followed. The operation is rarely called for. The writer has only done it once, and as there was no infective cholangioitis the patient recovered and is now well.

Choledochotomy, or incising the duct and removing the calculi, is the operation *par excellence* for the treatment of gall-stones impacted in the ducts and which cannot be removed by any simple means.

Duodenocholedochotomy, or reaching the duct through the opened duodenum for stones impacted in the duodenal end of the duct, is a useful modification of the operation.

It will thus be seen that the surgeon has a great variety of operations to choose from; and he will act the wisest who, knowing all, is able on the spur of the moment to choose that peculiarly adapted to the case in hand.

The purpose of this paper is to record the author's experience of the operation of choledochotomy, which is the ideal operation for gall-stones impacted in the common duct, and the following remarks, as well as the list of cases, refer to this operation and its modification, duodenocholedochotomy.

An oblique incision through the parietes, along the lower border of the right lobe of the liver, gives more room than the vertical, where the common duct has to be operated on, but if the vertical incision be employed, it must be made larger than the one for simple cholecystotomy.

A sand-bag under the loin brings the duct several inches nearer the surface, and is therefore of great utility, and Robson always employs it. Two assistants are advantageous, one to retract the stomach and intestines on the left by means of a firm flat sponge and a wide retractor or his fingers, having his right hand free to sponge away the bile flowing from the incised duct, and another to retract the right side of the wound, the liver, and right costal margin. The operator then, after adhesions have been separated, grasps the common duct between his finger and thumb, and makes it prominent, when a vertical incision may be made over the stone, which can be gently squeezed out or removed by scoop or forceps.

It is of the utmost importance to clear the ducts or the operation will be futile, as shown by Kehr, who left concretions behind in 16.6 per cent of his cases, and by Riedel, Terrier, Fenger, Lauenstein, Küster, and others. Fenger has suggested a flexible metallic probe, which he says will give a click when it touches a stone, or which will produce a grating sensation when it passes one. This the writer knows by experience to be a fallacious guide, as after carefully probing, and even passing a scoop into both hepatic ducts and up and down the common duct without feeling a calculus, the author inserted his finger through the incision and felt a stone, which he was then able to remove, but had he trusted to a probe he would inevitably have left it. The duct is usually dilated sufficiently to permit digital exploration, which under such circumstances Robson always advises, reserving a bent probe, or better still, a slender bent scoop, for use where the duct is not capacious enough for the finger. The hepatic duct and its primary branches can be readily explored, and he has removed calculi from them through an incision in the common duct.

For applying sutures he either uses a rectangular cleft palate needle or a simple round intestinal needle, usually discarding any needle holder. The first sutures of catgut bring together the edges of the muscular and fibrous coats, the final sutures of silk the serous covering of the duct.

The author usually inserts a rubber tube and gauze drain, and leaves it in for twenty-four hours, or longer if needful, and generally at the same time drains the gall-bladder as in an ordinary cholecystotomy. Where the concretions are impacted in the duodenal

end of the duct, it is very much easier and more effectual to get at them through the incised duodenum, which he has done on three occasions, all the patients being now well.

The operation of removing gall-stones from the duodenal end of the common duct through an incision in the duct was first performed by McBurney, then by Pozzi and Kocher.

The operation is really less difficult than it would appear, and is much facilitated by placing a sand-bag under the lower dorsal spine. In each case he has grasped the termination of the common duct, including the duodenum, between the left finger and thumb, and has then cut through the anterior wall of the gut, exposing the interior of the posterior wall of the intestine, with the termination of the common duct running in it. In two cases the writer laid open the duct from the papilla, and in another cut directly on the stone through the posterior wall of the duodenum. Bile flows freely as soon as the obstruction is removed, and it must be mopped away as it flows by gauze pads, as it always contains pyogenic organisms, and is therefore infective. In none of his three cases has there been any trouble with bleeding, and no sutures have been placed in the incision in the posterior wall of the duodenum. The incision through which the duodenum has been opened—vertical in two cases and horizontal in one—is then sutured by a continuous catgut suture for the mucous membrane, and continuous silk suture for the peritoneum. No drainage is required.

As in all these cases of obstruction in the common duct jaundice has been present over a longer or shorter period varying from months to years, and as in long-continued jaundice there is a tendency to bleeding, Robson is in the habit of giving all his cases, for a few days before operation, chloride of calcium in half-drachm doses thrice daily, and of administering it in a nutrient enema in one-drachm doses thrice daily for twenty-four or forty-eight hours after operation. Since adopting this method of treatment he has had little or no trouble from hemorrhage, either at the time of operation or subsequently, and he confidently recommends it as a useful measure.

The prognosis of choledochotomy will improve with experience, though it will probably be more serious than simple cholecystotomy, not only on account of the various complications of jaundice and infective cholangioitis, but because of the greater technical difficulties of the operation itself.

In 1886 Kehr collected from all sources eighty-four cases, with a mortality of 37.8 per cent, though his own mortality was only 6.6 per cent. The total number of operations is so few, and performed by so many different operators, that the conclusions to be derived from statistics are at present misleading. Moreover, another factor has to be taken into consideration, in that in some of the simpler cases of gall-stones in the common duct cholelithotomy may be performed, whereas if these cases were all submitted to choledochotomy it would give the operation a much more favorable appearance. For instance, he has operated directly for gall-stones in the common duct in forty-nine cases, with three deaths, equal to a mortality of 6.1 per cent. These deaths occurred, one after cholecystenterostomy and two after choledochotomy, and in all three the jaundice had been long continued and deep and associated with infective or suppurative cholangioitis. Among the cholelithotrities there was no death, but among the seventeen choledochotomies there were two deaths, equal to a mortality of 11.7 per cent. As experience increases, Robson believes and hopes that the mortality will be reduced to five per cent, though even if the mortality remain higher it must be borne in mind that nearly every recovery is a life saved, for in the greater number of these cases of gall-stones in the common duct death after prolonged suffering is the usual termination.

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### *CONTUSED WOUNDS OF THE ABDOMEN AND THEIR SURGICAL TREATMENT.*

ROGERS (*Medical Record*, Oct. 8, 1898) states that the chief points to be considered in making a diagnosis of grave intra-abdominal lesions are the history of injury and its location, character of vulnerating force, rigidity or boardy condition of abdominal walls, obstipation, vomiting, pain, anxiety, and restlessness, the degree of shock and prostration. Pulse and temperature may be taken as reasonably safe guides in making a prognosis. Depending upon degree of shock, the pulse is at first rapid, irregular, and weak; temperature subnormal or normal. In favorable cases the pulse becomes stronger and regular, temperature normal or above normal. In unfavorable cases the pulse continues weak, intermittent, becoming hard and wiry; the temperature fails

to reach normal, or there rapidly supervenes a condition of hyperpyrexia.

It is better surgery to open the abdomen in doubtful cases and find no lesion than wait in a single instance until signs of septic peritonitis are present. An aseptic exploration will do no harm, while delay means death in ninety-six per cent of all cases of rupture of the intestine. A free incision should be made in the median line, and injured organs located as quickly as possible. This is oftentimes difficult. In locating the seat of injury the exact point at which violence was applied should be remembered. After injury of this character there is paralysis of the bowels, and in most cases rupture will be found immediately beneath the point where vulnerating force came in contact with the abdominal wall.

Of further importance is the action of the omentum, especially where considerable time has elapsed after receipt of injury; and in many cases of rupture or injury to viscera the omentum throws itself into the breach, and endeavors by adhering to the wounded organ to protect the general cavity from infection. A large portion of omentum will be found adherent at the point of rupture, and adds much to the ease of locating injury.

The prognosis is much more unfavorable if it is necessary to expose intestinal coils, which procedure adds much to the shock of operation, so much indeed that death almost invariably occurs when evisceration is necessary. It is doubtful if such procedure is ever necessary or justifiable.

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### *THE BLOOD IN SEPTIC DISEASES OF THE ABDOMEN AND PELVIS.*

Herbert Maxon King (*Medical Record*, Oct. 8, 1898) is unable to find any evidence which points to existence of characteristic blood conditions in sepsis arising from pelvic or abdominal causes, as distinct from sepsis from foci in other parts of body, and thinks none can be admitted. A felon may produce leucocytosis alike in kind and degree with that of septic peritonitis, since the cause of both is the same, while the diseased area involved makes little if any difference.

Blood examinations are of inestimable value as diagnostic aids in distinguishing between sepsis arising from pelvic and abdominal sources and certain diseases which in other clinical appearances simulate it closely.

Leucocytosis is always present in sepsis, except in severe infections which result fatally within a few hours; it is absent in intestinal obstruction (when not cancerous), cystitis, endometritis, tuberculosis (when uncomplicated), typhoid fever, and malaria.

Malignant disease is hardly to be confounded with sepsis; but if the question arises certain morbid changes in the red cells, principally of necrobiotic character, are almost always found in the former, while such changes are rarely, if ever, noted in sepsis, however protracted the case. The question may arise as between catarrhal and suppurative appendicitis, in which the blood-count, in the opinion of some observers, is of diagnostic value.

In a true inflammatory condition about the appendix, leucocytosis may be very slight or absent altogether. The study of blood also aids in the prognosis of septic disease, and as indication for operative interference surgeons are more and more availing themselves of its aid; and with establishment of clearer comprehension of the causes of leucocytosis and the origin and destiny of various elements, both normal and pathologic, in blood, a new light will be thrown upon the diseases under discussion, as upon many others which lie farther within the realm of speculation.

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### *RESECTION OF THE INTESTINE FOR MALIGNANT GROWTH SUBSEQUENT TO OPERATION FOR INTESTINAL OBSTRUCTION.*

Mr. Battle (*Medical Press*, Oct. 5, 1898) operated on a woman aged twenty-eight, on whom he had previously operated for chronic obstruction of bowels. There had been intestinal obstruction of three months' duration, the cause of which was diagnosed as malignant stricture of the large intestine, probably situated in the descending colon or sigmoid flexure. Median incision was made to discover the exact seat of obstruction, and when this was located at the splenic flexure an artificial anus was made just above the opening in the abdominal wall, being well to the outer side of the linea semilunaris and a short distance below the ribs. A loop of intestine was brought out and retained in position by means of a pair of Spencer Wells' forceps, passed through the mesentery, after which a Pauls' tube was fastened in the upper part of coil. Convalescence was slightly retarded by localized cellulitis, but a month after operation all traces of obstruction had disappeared, and the patient had improved greatly in health.

The patient having been placed under ether, and the opening into the bowel having been closed with a plug of cyanide gauze, an incision was made along the linea semilunaris for four inches below the artificial anus. A piece of gauze was next passed into the abdominal cavity to the outer side of the colon. The growth, which was well localized, could be brought to the surface; there did not appear to be any glandular enlargement present. The bowel below the growth was clamped by means of a piece of rubber tubing passed through the mesentery and held with artery forceps; the bowel was cut across and the mesentery behind the growth cut near the gut, the vessels being caught as they showed themselves. The bowel was secured in a similar way above. The artificial anus was separated from its attachments to the abdominal wall, the main incision being extended into it from below; the piece of gauze was removed from the upper end, the bowel was washed out, and a section was made above. The growth and bowel from two inches below the disease to above the artificial anus were then removed. During this procedure the abdominal cavity had been shut off by means of flat sponges. Lateral anastomosis was then effected in the following manner: The ends of the gut were turned in and closed by continuous Lembert sutures; the upper portion was placed to the outer side of the lower one so that when sutured it would lie above and external to the latter. A row of interrupted Lembert sutures was placed about half an inch behind the line selected for opening; the opening was then made about two and a half inches long in both portions of bowel, and a continuous stitch, including all the coats, was passed to unite the opposed edges. Interrupted Lembert sutures were then inserted in an outer row, surface of peritoneum being thus closely apposed for a distance of half an inch around the main opening. The parts were carefully cleansed, gauze and sponges being removed, and a portion of omentum was placed over the band which had thus been united. The abdominal wound was then closed in two layers, the peritoneal and subperitoneal tissue with fascia being first shut off. The ordinary dressings were applied.

Mr. Battle said the case illustrated the importance of doing resection of the large intestine in two stages, in cases of disease which had produced obstruction. It was never advisable to perform resection on a patient who was suffering from obstruction, when neither the general nor the local condition was favorable. In the case under consideration, at the first operation, the patient was exhausted with vomiting and want of food, whilst the distention of the abdomen prevented the mesentery under the growth from being brought out. He had selected lateral anastomosis in preference to end-to-end anastomosis, for he was of opinion that lateral anastomosis was much the safer method of operating. In the same way he considered that the fewer mechanical contrivances in the shape of clamps that were used the better for the bowel; also it was preferable to avoid the use of bobbins and buttons when possible.

The patient has progressed favorably with the exception of a tendency to bronchitis, the effect of the prolonged etherization. The growth was probably cylindrical carcinoma, which had almost completely occluded the bowel.

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### *FOREIGN BODIES IN THE EAR.*

HUMMEL (*Münchener Med. Woch ; Medical Record*, Oct. 8, 1898) makes the following deductions: (1) The relation of the normal ear canal to inanimate foreign bodies is entirely without reaction; that is, a foreign body in the ear does not, *per se*, endanger the integrity of the ear. (2) Hasty endeavor at removal is not only unnecessary, but can become very injurious. (3) In all cases not previously interfered with (with few exceptions) foreign substances can be removed from the ear by syringing. (4) General practitioners should never employ anything but the syringe in endeavoring to remove foreign bodies from the external auditory canal. (5) Instrumental removal of foreign bodies from the ear should be effected only by one fully able to examine the ear with the otoscope and acquainted with every operative manipulation in this region.

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### *NOTES ON THE TECHNIQUE OF SKIN GRAFTING BY THIERSCH'S METHOD.*

ARTHUR E. BAKER, F.R.C.S. (*Practitioner*, October, 1898), says that the instruments required are few: a pair of scissors and forceps and a broad flat razor are all that are necessary. The latter is best sterilized by being immersed in spirit, which does not spoil a fine cutting edge as does boiling. Later and during operation it should be dipped in a

mixture of glycerin 25 per cent, spirit 25 per cent, boiled distilled water 50 per cent. This will lubricate the blade and enable thin grafts of epidermis to slide or float out on the steel instead of gathering into shapeless wisps.

Skin from which grafts are to be taken, usually the front of the thigh, should be very carefully cleansed on several occasions. A day or two before operation this process should be begun by a warm bath of the whole body. After this the thigh is washed briskly with methylated spirit and wrapped for a couple of hours in a towel wet with 1-in-20 carbolic lotion and covered with oiled silk. Next day the same process is repeated, during which there will probably be some exfoliation of epidermis, due to the irritation of the carbolic acid. This is very salutary, as it carries off superficial layers which contain the largest number of microbes. The skin should then have a rest until a couple of hours before operation, when a carbolized towel is again applied and left on until the patient is on the operating table.

Supposing rodent ulcer of the face is to be removed and grafted; the skin of the affected side is treated as above, and finally washed with spirit. The growth is then removed freely, bleeding vessels being closed by pressure forceps. The cavity left is filled with a sterile sponge or sterile gauze until all oozing has ceased. In the meantime the thigh is washed thoroughly with spirit. When the wound has ceased oozing, the razor, wet as above in glycerin mixture, is used to shave off from the thigh the thinnest possible graft. The latter should consist only of epidermis down to the papillary layer. If it contains any of the latter it will curl up and become unmanageable. The larger the graft is, compatible with its thinness, the better; as a rule it will amount to about an inch square. As it now lies on the blade of the razor it may be spread out with the tip of the finger or a forceps. A sterile sponge is now taken and pressed against the graft, and the razor is drawn away, leaving the graft on the sponge. Here it may require to be spread out a little further. The wound is now uncovered, and if oozing has ceased the graft, sticking to the sponge, is pressed down upon it, and it will adhere, the sponge coming away after absorbing the moisture pressed out from under graft. Then another graft is placed over any raw surface left uncovered, and slightly overlapping the first, and so on until the whole wound and its borders are covered. A large pad of sterile gauze is laid gently over the whole wound after each graft, and gently pressed upon by an assistant, while the graft is being prepared; it is then lifted gently by one end until the latter is in place, when it is again laid down. Each time it removes all moisture.

If a granulating surface is to be covered in, the surface of the healing ulcer is first scraped with a blunt-edged spoon until the superficial layers of cells have been removed. The bleeding is next arrested carefully by pressure, as above. The grafts are then cut and applied as described. It is a mistake to scrape too deeply through an ulcer, as the tissue then left on its base is unsuited for grafting, consisting mostly of fibrous tissue.

In both instances the dressing should be a pad of sterile gauze or salicylic wool pressed evenly into every corner of the wound upon the grafts. This serves the double purpose of squeezing out any moisture from under grafts and bringing all the surface of the latter into close contact with tissues underneath. This pad is covered with more of the same material, so as to give good elastic pressure over whole surface. It should be left untouched for six or seven days, and should then be soaked in lotio boracis until quite soft before being loosened.

Of course, such a dry dressing pressed directly upon grafts, and more or less infiltrated with blood, will form a hard cake at the end of a week or so, firmly adherent to the grafts. There might be some fear then that they would pull off the latter when removed. But, on the other hand, if deeper layers of the graft have not firmly united to the wound by the end of a week they will not unite at all, and had better be removed. What is usually seen when the dressing is first removed is that the superficial or dead layers of epidermis have stuck to the dressing and have come away with it, but leaving deeper and essential cells behind.

In many cases, however, when the first dressing is taken off at the end of a week, the thin bluish-white area of cicatrization is seen to be well advanced. In those cases where the base of the defect to be covered lies at a much lower level than the general surface of the skin, as in a wound left by the removal of a rodent ulcer, grafts must be made to cover the vertical edges closely before resting on the horizontal base. When first healed the appearance is remarkable, but in the course of time the base of the defect rises, and the edges thin down until the new cicatrix is almost on a level with the sur-

rounding skin. The wound made on the thigh during the removal of the grafts requires only a boracic lint dressing to be left on for a week. So complete is the *restitutio ad integrum* that in a month or two it is almost impossible to say from what surface the grafts had been removed.

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*ONE HUNDRED CÆSARIAN SECTIONS.*

LEOPOLD and HAAKE (*Quarterly Medical Journal*, October, 1898) have published recently in the *Archiv für Gynækologie*, Band lvi, Heft 1, an article upon 100 Cæsarian sections (see also *Ann. de Gynec. et d'Obst.*, June, 1898). As Professor Leopold has performed more Cæsarian sections than any other man, alive or dead, a special value attaches to his experience and conclusions. The series extends over a period of rather more than fourteen years, and all except the first were performed at the Königliche Frauenklinik at Dresden. Seventy-one were "conservative," 29 were mutilative—*i.e.*, Porro's operation. The 99 operations at Dresden corresponded with 22,358 labors, or one in 2258. The first 50 cover fifteen years, the second nine years. This increased frequency is due to the greater confidence and readiness in resorting to operation which perfected antisepsis has brought about.

The indications for operation are either "absolute" or "relative," relative indication referring of course to cases where operation is performed as an alternative to possible embryotomy. But it must be emphatically laid down that relative indications must only lead to conservative operation where the condition of the most rigorous antisepsis can be realized. In contracted pelvis the relative indication recognized at the Dresden clinic is a true conjugate of less than 6 centimeters (2.36 inches), but such figures are only an approximate guide. Clinically the indication may be more absolute with a true conjugate of 6.5 centimeters and a large child, than with a conjugate of 5.5 and a small child. The limit for version followed by immediate extraction with the employment of Walcher's position is a true conjugate of 7 centimeters (2.73 inches) in flat, rickety pelvis, and 7½ centimeters (2.96 inches) in flat, generally contracted, pelvis.

In considering the indications for Porro as opposed to conservative Cæsarian section, the authors say that Porro should be done when the following conditions are not rigorously fulfilled: (1) The parturient woman must have energetic uterine contractions; (2) the constitution must not have been weakened by serious illness; (3) it must be certain that the patient is not already infected. It is also desirable that there should be no marked elevation of temperature or acceleration of pulse. It is very desirable that the membranes should not be ruptured, or ruptured but very recently before operation. It is essential that there should have been very little examination, and none by hands of doubtful asepsis. Above all else, there must be no suspicion of gonorrhea, acute or latent. The authors advise for this reason a bacteriological examination of the secretions of the vagina and cervix. If gonococcus be found, Porro may be safer than perforation. Nephritis is another contraindication.

Fifty-five of the 100 cases were multiparæ. These had had 108 previous confinements, namely, 9 miscarriages, 7 premature children (2 living, 5 dead), 15 spontaneous deliveries at term (10 living children and 5 dead); instrumental and operative deliveries, 77. But 14 of these confinements were Cæsarian sections; the remaining 94 had yielded 23 living children, a fetal mortality of 83.6 per cent. In 13 of the 100 operations, section was performed more than once on the same patient, viz., on one four times, on another three times, on eleven patients twice. As regards mode of operating in conservative Cæsarian section, the elastic ligature was used in most of the cases. If but moderately tightened and not left too long *in situ*, there is no inconvenience from its use. It is especially adapted for operating when short of skilled assistance. Silk is used for sutures. Twelve to fifteen deep sutures are inserted one centimeter from the peritoneal edge; they traverse the muscle in a curve and emerge at the inner edge of the wound. Between these are thirteen to seventeen sutures which pass through peritoneum and superficial muscle only. Ergotin is injected at the commencement of anesthesia, and again just before operation.

RESULTS.

| Operation. | | Deaths. | Percentage. |
|---|---|---|---|
| Conservative | 71 | 7 | 9.8 |
| Porro | 29 | 3 | 10.3 |
| | 100 | 10 | 10 |

The authors say that three of the conservative operations and two of the Porro's owed their death to causes not strictly incidental to the operation, and that this would reduce the total mortality to 5.2 per cent. We read-

ily recognize the fact that in such a long series of cases some would be operated on under very disadvantageous conditions. As to the fetal mortality, in all the seventy-one conservative operations the child was born alive, but five died before the mother left the hospital. In the Porro series, one was born before operation, three died before operation, two died during the labor, and two after birth, from intestinal catarrh.

*Sequelæ.*—In 51 cases, no fever; in 13, slight fever; in 13, complication of septic nature.

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*THE SURGICAL TREATMENT OF GOITRE.*

REVERDIN (*La France Méd. et Paris Méd.*, Oct. 14, 1898), after describing briefly the various operations practiced for the relief of the symptoms dependent on goitre, analyzes over six thousand cases, and deduces from this that the mortality incident to operation is less than three per cent. Total extirpation shows a mortality of 18.9 per cent, while intraglandular enucleation shows but .78 per cent. The latter operation should, then, be given the preference.

As to the accidents and complications attendant on the operation, lesions of the veins are dangerous because of the possibility of air embolism. The author states that he knows of nine fatalities due to this cause. Each vein should be divided between forceps or ligatures.

The primary hemorrhage in the case of glandular tumors may be so free that enucleation may have to be abandoned in favor of excision. By proceeding slowly and deliberately and keeping to the capsule of the new growth the bleeding rarely gets beyond control.

The recurrent laryngeal nerve may be wounded in excision. Kocher states that such an accident occurred in seven per cent of his cases; enucleation greatly lessens the danger of this complication, which is best avoided by careful isolation of the inferior thyroid artery before it is tied. The superior laryngeal, the hypoglossal, and the sympathetic nerves, the trachea, larynx, esophagus, and pleura have been wounded exceptionally.

For the purpose of lessening the danger of infection the wound should be closed. Even when it runs a sterile course there is commonly a distinct fever, named by Poncet thyroid fever, supposed to be due to absorption of the thyroid secretions.

Pneumonia is a common sequel of operation; its cause is obscure.

When the trachea has been greatly affected by pressure atrophy, on the removal of the surrounding tissues it may collapse on inspiration. This may be remedied by intubation through the larynx, or by holding the trachea open by stitches.

Both tetany and myxedema develop exceptionally after operations. Psychoses such as melancholia, dementia, mania, epilepsy, hysteria, are observed only after total extirpation.

As to the results of operation, a transverse incision neatly sewed leaves a scarcely perceptible scar, the functional troubles are usually cured at once, and recurrences, at least those requiring a second operation, are rare.

When the disease is distinctly limited to one lobe the author prefers unilateral extirpation.

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*INTERSCAPULO-THORACIC AMPUTATION FOR THE REMOVAL OF MALIGNANT TUMORS.*

BERGER (*La France Méd. et Paris Méd.*, Oct. 14, 1898) reports the case of a man aged twenty-eight who exhibited a tumor, malignant in appearance, three months old, the size of a turkey's egg, which starting from the neck of the humerus had invaded the deltoid and the scapular muscles. Berger cut through the clavicle in its mid portion, ligated the axillary artery and vein, then with very little hemorrhage amputated the upper extremity, including the scapula and its attached muscles, the deltoid, and a mass of enlarged glands in the axilla.

The infiltration was myxomatous, having originated from the medullary cavity of the humerus.

Eighteen months after operation there was no recurrence.

Berger reports the after-history of a second case, on whom he operated fifteen years ago because of an enormous enchondroma. This man is at present an active country postman.

As a result of statistical study Berger states that forty-six amputations of the arm, including the scapula, practiced for the removal of tumor of the humerus, were followed by operative death in but two instances. An infant two years old died, probably of shock. The other fatality occurred at the hands of Bergmann; the malignant infiltration required for its complete ablation, in addition to the removal of the arm and shoulder, a partial resection of the sternum and of the

first rib. Moreover, Bergmann ligated the superior vena cava and tamponed the mediastinum.

Thirty-one of the cases tabulated remained under observation; in fourteen of these recurrence or metastasis was noted, with one exception, in from four to six months. In seventeen there has been no recurrence or metastasis. Ten of these cases have been under observation for more than a year. Since the osteosarcomata are always precocious in their recurrence, Berger holds that these ten cases can be regarded as permanently cured.

This establishes the interscapulo-thoracic amputation as the one of choice in the treatment of malignant tumors of the upper segment of the humerus, since the mortality incident to it is not greater than that which follows scapulo-humeral disarticulation, and since it gives thirty-three per cent of radical cures as contrasted to the almost certain failure of the latter operation.

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*AN ADDRESS ON SOME RUDIMENTS OF INTESTINAL SURGERY.*

TREVES (*British Medical Journal*, Nov. 5, 1898), the first English authority on abdominal surgery, delivered before the Midland Medical Society an address notable for its humor, valuable because of its foundation upon the logical deductions of a wide personal experience. A partial abstract follows:

In a fatal case of acute intestinal obstruction it can hardly be said that death is due directly to the obstruction. The complete closure of the bowels for a period of say seven days is not in itself an accident to cause death. Moreover, the clinical manifestations in a case of acute intestinal occlusion are in a large part due to conditions other than those directly arising from the obstruction in the lumen of the gut. Finally, there is a period in the progress of such a case as we are considering in which the relief of the obstruction will not save the patient's life. Those who like to speak in paradox are almost justified in saying that in fatal cases of intestinal obstruction the patients do not die of intestinal obstruction. The interest of this matter extends, however, beyond a mere play on words, and it can be shown that an undue prominence given to the mere fact of the obstruction is apt to distort both the clinical conception of the disease and the proper view of its treatment.

In the course of a case of acute intestinal obstruction it is possible to recognize three stages. In the first stage—or that of the onset of the trouble—the symptoms are those of intense abdominal pain, collapse, and vomiting. We will assume that the lesion is represented by the snaring of a loop of ileum by a peritoneal band. The symptoms in question, however, are in no way due to the fact that the bowel has become abruptly blocked. They depend upon the circumstances that a sudden and intense impression has been made upon exquisitely sensitive abdominal nerves. The symptoms must be classed as purely nervous. The vomiting, for example, is reflex, and has no connection whatever with the accidental fact that the bowel has become occluded.

The symptoms which mark the onset of a case of acute intestinal obstruction have little or no diagnostic character. They are symptoms which attend all sudden and intense painful impressions upon important visceral nerves, and have been collectively described under the title of "peritonism." They are symptoms common to a series of intra-abdominal accidents. In the absence of any determining feature in the patient's history these clinical phenomena may equally well mark the passage of a gall-stone, torsion of an ovarian tumor, the perforation of an ulcer of the stomach, or the rupture of a pericæcal abscess. They are nervous symptoms produced by a common nerve lesion, and their interpretation can proceed no further than this—there has been an abrupt and intense impression made upon some part of the abdominal nerve plexuses. We have all seen cases in which perforation of the stomach or appendix has been mistaken for intestinal obstruction, and *vice versa*.

In what may be termed the second stage in a case of acute obstruction the symptoms attain more individuality, and depend without doubt mainly upon the mechanical obstacle in the bowel. The pain is to a large extent due to disordered and futile peristaltic movements, the absolute constipation depends upon the blocking of the intestine, and the persistent vomiting is in the main due to the same cause. The character of the vomit, however, shows that another factor is being introduced into the circumstances of the case in the form of rapid decomposition of the intestinal contents. This depends, of course, upon the unnatural retention of those contents in the bowels, and probably in a still larger degree upon vascular and other changes

in the intestinal wall. The vomited matter becomes offensive, and acquires an odor which for want of a standard of offensiveness may be called stercoraceous. Feculent or fecal vomiting—by which I assume is meant the ejection of feces—I have not met with in acute obstruction. Finally, there is an increasing distention of the abdomen. This is largely due to mere accumulation, to mere inability of the contents to escape. The meteorism in intestinal obstruction is, however, in great part due to vascular changes in the bowel wall. This fact has been fully demonstrated by experiments upon animals and by pathological experiments in man. It is well illustrated by a distention of the twisted loop in volvulus of the sigmoid flexure. The most severe case indeed of meteorism of the small intestine which has come under Treves' notice was associated with no mechanical obstruction in the gut, but was due to thrombosis of the superior mesenteric vein.

Last of all, in the third or final stage of acute obstruction, the symptoms have little to do with the actual obstruction as such. They are the symptoms of poisoning, and the patient who dies unrelieved dies poisoned. The septic matter which leads to his death is derived from his own intestine. It is the rapid onset of septicemia which makes the operative treatment of acute intestinal obstruction so futile in the majority of cases. In many an instance an accurate diagnosis has been made, an early incision has been carried out, and the cause of the obstruction has been readily discovered and removed. The abdomen is closed and the patient dies. Treves quotes one very painful example of this sequence of events. The patient was a gentleman of middle age; the operation was performed forty-eight hours after the onset of the attack. A strangulating band presented itself the moment the abdomen was opened. It was divided without difficulty and the parietal wound was closed. A more favorable case could hardly be conceived, yet the patient died with septic manifestations, and necropsy revealed no breach in the bowel and no gross peritonitis.

Those who wish to advance the therapeutics of intestinal obstruction must first of all grapple with this terrible element of intestinal septicemia. Surgery wants a Lister who will teach us how to overcome the process of decomposition in the bowel. The lesion to the bowel need be by no means grave; the operation of dividing an easily discovered band cannot be considered to be severe, and yet the patient dies. In a large proportion of these cases there is infection of the peritoneum to a degree which may lead to death, and yet produce few of the naked-eye manifestations of peritonitis; but the infection starts from the bowel, and in the bowel the process of antisepsis must start. The intestine has some power of acquiring immunity against this septicemia, as is made evident in cases of chronic obstruction of the bowel, when one meets with a slighter grade of this self-poisoning, from which the patient makes an easy recovery. Such milder forms are often seen in instances of fecal accumulation. As soon as the fecal mass has been removed there is often some fever of a mild degree and collapse and possible nausea or even vomiting. As a rule such manifestations vanish in a day or so. The stomach seems not to lend itself to this form of blood poisoning, and extensive accumulations may take place in that organ and lead to no septic effects. The colon, too, would appear to possess a natural immunity up to a certain point, but in the lesser bowel the process is uncontrolled, desperate, rapid, and almost hopeless.

From a practical point of view the treatment of acute intestinal obstruction appears to demand two things of the surgeon: (1) An early operation, and (2) the evacuation of the bowel after the strangulation has been relieved. The first of these two measures will be allowed by all to be commendable. The opening of the abdomen in these particular cases is not a trifling measure, but it is infinitely trifling when compared to the mere standing by with folded hands to await the remote possibility of spontaneous cure. The so-called medical treatment of these cases is a relic of the Dark Ages, and must rank with the "faith-cure" and the medical treatment of a dislocated hip.

With regard to the second proposition, it appears in a certain sense that the real danger to life lies rather with the poisonous material in the intestine than with the actual obstructing cause beyond its walls. The patient is dying not because his bowel is occluded, but because the distended gut above the obstruction is producing a poison which is sapping his strength. It has, unfortunately, been too many times demonstrated that the successful relief of the obstruction will often fail to save life, and, indeed, it is of more moment to relieve the patient of the trouble within his bowel than of that which is with-

out it. In all cases of acute intestinal obstruction which have been dealt with in recent years Treves has not considered the operation complete until he had, as a matter of routine, emptied the bowel. This is conveniently done by bringing the most distended coil to the parietal incision, and evacuating it by means of a small glass tube, which is inserted into the gut, and secured to the bowel wall by a single encircling thread. He has had no difficulty in closing the small artificial anus by a subsequent operation, carried out some weeks after the original proceeding. This measure has had the effect of reducing the mortality of this formidable procedure to one-half of its original rate.

To appreciate and deal with septic processes within the bowel must be one of the very first rudiments of intestinal surgery. The teachings of Lister have led to a revolution in the surgeon's art which is still a matter of amazement. Antiseptic surgery, however, as we employ the term, concerns itself mainly with the prevention of forms of infection in which the septic germ is introduced in the body from without. Antiseptic surgery has practically left untouched those forms of infection in which the septic element is in a certain sense introduced into the system from within.

With regard to that infection the remarkable fact is this, that the bacillus which appears to be most concerned in the production of this septicemia is not a bacillus introduced accidentally into the bowel from without, but a bacillus which exists normally in the bowel in a condition of health. It is probable that the microorganisms described under this name do not belong to one particular definite species, and that the term bacterium coli commune may be taken as a collective name for a group of bacteria which will probably be in time resolved into several different species. Anyhow, this widely diffused bacillus exists normally in the intestine of healthy man, and appears in the bowel a few hours after birth. It is found in all parts of the intestinal canal and at all periods of life. It is scarcely reasonable to assume that this invariable occupant of the healthy intestine is a mere noxious or useless parasite. It is more than probable that it is concerned in some direct or indirect way with the process of digestion. It would be indeed interesting to know how the phenomena of digestion would proceed in a sterile bowel.

The bacterium coli may remain in a perfectly harmless saprophyte; on the other hand, it may rapidly alter its character, and become possessed of intense pathogenic activity. It has been shown that in the majority of cases of perityphlitis the local inflammation is due to the bacterium coli commune which has escaped from the lumen of a diseased vermiform appendix. That extensive variety of peritonitis which takes its origin from the intestine, as illustrated by the peritoneal infection attending strangulation of the bowel, would appear to be, in nearly every instance, due to microorganisms now under discussion.

The virulence of the bacillus coli is subject to quite extraordinary variability. An exaltation of its virulence may be due to an association with other organisms, pathogenic or non-pathogenic; but in most instances its morbid activity is excited by some change in the condition of the bowel itself. Diarrhea, enteritis, cholera, and typhoid fever are all capable of rendering this organism virulent, and the same may be said of the conditions attending fecal accumulation.

Examinations upon animals make it probable that in man a moderate infection of the peritoneum with the colon bacillus from a healthy bowel would be harmless, while an infection by equal dose from a bowel rendered in any way unhealthy would induce peritonitis. Surgical experience would certainly support the suggestion. Klecki has shown that the bacterium coli from the ileum is the most virulent, that from the jejunum ranks next, while that from the colon is the least potent for harm. There is no doubt that so long as the bowel wall remains intact, especially as regards the epithelium, little or no opportunity is afforded the bacterium to escape from the gut. Artificial compression of a loop of bowel by an india-rubber ring (with or without ligature of the mesenteric vessels) will cause acute general peritonitis in dogs, as Klecki has demonstrated. The animals die in twenty-four to forty-eight hours. The epithelium rapidly desquamates, the vessels dilate, and there is an abundant infiltration of the whole wall of the ligatured knuckle. The virulence of the colon bacillus within the loop is infinitely greater than that of the same microorganisms from an undisturbed part of the same intestine.

These facts suggest by the way that the handling of the bowel during an operation should be of the gentlest, and that the evacuation of an obstructed loop is very desirable. On the other hand, there is no

doubt that the normal peritoneum has considerable power of resisting an invasion of this particular bacterium. This protective power, however, would appear to be very soon lost if the delicate surface of the serous membrane be damaged. There is no doubt that the washing and scrubbing and rubbing to which the peritoneum was exposed while surgeons were under the influence of that fatal expression "the toilet of the peritoneum" led to many deaths.

The peritoneum has remarkable powers of protecting itself if only the surgeon will permit it to exercise them. Save in a few exceptional instances, the serous membrane is better able to deal with a moderate effusion than are the overready sponge and the futile and often fatal drainage tube.

Treves has noticed, moreover, that the peritoneum which has been subjected to repeated infections becomes in time almost immune. The operations which can be carried out with success in patients who have repeated attacks of peritoneal inflammation are often almost beyond credence.

The average colotomy gives the patient but a minimun amount of trouble. In a large proportion of cases it is possible to secure a good action of the bowels every forty-eight hours, the artificial opening causing the patient but little or no inconvenience in the interval. If there be a degree of colitis present at the time of the operation, it is true that the new opening may be the seat of a not inconsiderable distress. But in the average case the administration of a dose of mistura alba very early in the morning on alternate days will secure an ample evacuation of the bowel followed by a period of immunity from disturbance. This much-to-be-desired result is rendered possible by very careful feeding, and above all by the utmost attention to the wound. There is no doubt that the troubles attending colotomy, as performed some years ago, were in large measure due to neglect of the wound. A pad of septic tow and a dab of vaselin were placed over the bowel, and the requirements of surgery were considered to have been thereby fully met. The gross neglect of the part was excused on the ground that the operation area was already septic. As a matter of fact, few complicated wounds respond more readily to careful treatment and assiduous attention than does the colotomy incision, and the benefit to the patient from such care can hardly be overestimated.

It is satisfactory, however, to note that the necessity for colotomy is rendered less frequent by the numerous opportunities for performing resection of the bowel, especially for cancer, and by the excellent results which have followed upon the operation of lateral anastomosis or short-circuiting. The incision of a portion of the colon for malignant disease must rank as a most satisfactory procedure. The best results are obtained when the growth is situated in the sigmoid flexure, or in such other part of the large intestine as may be provided with a free mesocolon. The least satisfactory cases are those in which the growth has involved a part of the bowel which is unassociated with a mesocolon and has a portion of its surface denuded of peritoneum. It is essential for success that the growth should be dealt with early, and that the excision of the gut and of the associated mescolon should be as liberal as possible. Indeed, it appears that among all operations for the treatment of cancer by excision the removal of a portion of the sigmoid flexure for early epithelioma must rank as one of the most successful.

In those instances in which the malignant growth, by reason of its position or extent, cannot be removed, there are, happily, a fair proportion of cases in which a lateral anastomosis can be carried out, and the patient thus spared the inconvenience of a colotomy. Experience has shown that a considerable portion of the intestine can be thrown out of the circuit without apparent inconvenience to the patient.

Many of the intestinal sutures are hopelessly bad, because the thread passes through all the coats of the bowel and acts as a vehicle for conveying septic germs from the lumen of the gut to the peritoneum. Others are hopelessly complex, and of interest only to those who find delight in ingenious puzzles. Not a few are the subject of periodical invention, whereby the forgotten Jones-Robinson suture of 1806 becomes the quite original Smith-Johnson suture of 1898. The best stitch is still the ancient one, which includes a fine continuous suture of the mucous membrane, and points of Lembert suture, which involve the outer coats of the viscus. Certainly in the stomach no form of stitching is more convenient than this. Moreover, among the horde of intestinal needles, the best is the milliner's needle which comes from the draper's shop.

Of the methods of uniting a divided bowel, either after excision or in the performance of a lateral anastomosis, the best theoretically is,

without doubt, the method of simple suturing. In practice, however, this can seldom be advantageously employed. The simple suture involves a great expenditure of time; the differences in the segment of gut above the stricture and that below it render straightforward suturing almost impracticable, and the bowel at the suture line is very apt to kink. To cope with these difficulties there has arisen that remarkable host of plates, disks, tubes, cylinders, buttons, and bobbins which has so disturbed the peace of the surgeon who hungers after the "last new thing." Not a few of these appliances alternate between oblivion and rediscovery, to the great hindrance of progress. For example, in 1882 Treves described a method of suturing the bowel over a collapsible india-rubber bag which was sausage-shaped, and was introduced into the ends of the gut to be united. It could be blown out into the form of a firm cushion, and, before the last stitches were introduced, could be emptied and withdrawn. A little experience showed him that his bag was useless, and it was promptly discarded. Now after a period of sixteen years an American surgeon, Dr. W. S. Halsted, rediscovers his useless bag, and reproduces it with singular exactness. Halsted believes his old-new procedure to be "better than any method hitherto devised"—and so we step back sixteen years. Dr. Halsted also, by the way, expresses his conviction "that there should be a law compelling all surgeons to practice on animals the operation for circular suture of the intestine and for intestinal anastomosis." It is hoped this view will not commend itself to the legislators of this country. Many years ago Treves carried out on the Continent sundry operations upon the intestine of dogs, but such are the differences between the human and the canine bowel that when he came to operate upon a man he found he was so much hampered by his new experience that he had everything to unlearn, and that his experiments had done little but unfit him to deal with the human intestine.

Of the various appliances in vogue for the uniting of divided bowel the best is Murphy's button. It is very far from being a perfect instrument, but it compares at least very favorably with the other forms of apparatus which compete with it.

Treves has employed Murphy's button in considerably over fifty cases, with results which are certainly satisfactory. The button requires no elaborate preparation, and it is always ready, its introduction is exceedingly simple, and is effected in a few minutes. The two parts of the instrument may certainly jam, but that accident is the result of careless handling. It does not induce a gangrene extending beyond the limit of the button. The two definite and undoubted objections to the button are these: it may be indefinitely retained, and its separation may be followed by contraction of the artificial opening. These two undesirable results are often in close relation to one another as cause and effect.

In the cases of cholecystenterostomy in which he has used the button, Treves has never known it to be retained; and the opening made has not undergone inconvenient contraction. In cases in which the button has been employed in the colon only, though the button was not retained, exceptionally there has been contraction of the new passage.

In examples of gastroenterostomy performed by means of this apparatus, retention of the button for considerable periods, or its absolute failure to appear at all, seems to be the rule rather than the exception.

The explanation of these cases of contraction, whether in the stomach or in the colon, is not far to seek. The button effects an opening between the viscera by means of pressure gangrene. After-contraction has only occurred in cases in which the upper viscus was much dilated at the time of the operation. It is needless to say that in gastroenterostomy for pyloric obstruction a dilated stomach is met with, and in intestinal anastomosis for stricture the upper segment of the gut is apt to be enormously distended. After the operation the dilated organ contracts, and consequently the newly made hole contracts. A hole in a dilated stomach made by pressure gangrene, and the size of a half-crown, may readily become an aperture the size of a four-penny piece when the distended viscus had gradually contracted. It is therefore very desirable to have the viscera to be dealt with as empty as possible before the button is introduced. This end is very difficult to secure even to a partial degree. The stomach, for example, in old pyloric obstruction, even when kept washed out for many days, is slow to contract; and if at the time of the operation the viscus be still much dilated, retention of the button and possible inconvenient contraction of the new opening may be regarded as possible.

This association between previous disten-

tion of a viscus and the subsequent contraction of the aperture made in it is, of course, by no means limited to Murphy's button. It applies to nearly every method in vogue for carrying out the operations now under discussion.

Still, in spite of many drawbacks and failures, intestinal surgery has made within the last few years decided and substantial success, but it will fall short of perfection until antiseptic surgery, which so far has penetrated only to the serous covering of the gut, has reached the mysterious and septic lumen which lies within the bowel wall.

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*THE TREATMENT OF TETANUS BY MEANS OF INTRACEREBRAL INJECTIONS OF ANTITOXIN.*

George G. Rambaud (*New York Medical Journal*, Dec. 17, 1898) was led to try this method of treating tetanus by a contribution from Roux and Borrel, who concluded from a number of experiments that the "tetanic antitoxin, when injected into animals, remains in the blood, whereas the toxin is extracted from it and fixed by the nerve cells. The antidote does not come in contact with the poison, and the two substances, though so near each other, fail to meet. The serum is efficacious against the toxin which is placed under the skin because the greater part of it enters the blood, but it proved powerless against the poison that has already reached the nervous elements."

This is why in man as well as in animals the subcutaneous and intravenous injections so often fail. When they are resorted to, the nervous system has already fixed a smaller or greater quantity of toxin, and while the antitoxin thus administered neutralizes the toxin circulating in the blood and limits the poisoning, it does not reach that which is attached to the spinal or cerebral cells. When the intoxication has advanced too far, the toxin diffuses from one nerve cell to the next, protected from the antidote, and the disease runs its course.

So Roux and Borrel concluded that, in order to bring about a cure in a case of tetanus, the antitoxin must be placed where the toxin is acting in order to preserve the vital portions of the cord before they are affected. Accordingly they treated with intracerebral injections of antitoxin forty-five tetanized guinea-pigs; thirty-five of them recovered. Seventeen others were treated with subcutaneous injections; only two of them survived. Seventeen check guinea-pigs, not treated with the serum, died.

Theory and experimentation agreed. Antitoxin introduced into the brain protects the upper part of the cord when the lower portion is already affected by the poison; but it does not cure the lesions that have already taken place; the contractions existing at the time of intervention persist for some time; and Roux and Borrel state that if the medulla is already poisoned (shown by impaired deglutition, and possibly respiratory disturbances) death cannot be prevented.

The feasibility of the procedure was demonstrated soon after Roux and Borrel had given out the results of their researches. The first case was successfully treated about two months later. A boy developed symptoms of tetanus fourteen days after a crush of the tips of the index and ring fingers. Three days later he was given a subcutaneous injection of twenty cubic centimeters of antitetanic serum. The next day the skull was opened and Roux injected four cubic centimeters of serum concentrated one-half. Three days following twenty cubic centimeters was given subcutaneously, and thereafter in the next five days fifty cubic centimeters in the same way. The patient recovered.

The second case developed without a history of wound. He was given serum subcutaneously on the next day; on the day following he received an intracerebral injection of five cubic centimeters of the concentrated serum. He died on the following day, by asphyxia.

The third case developed tetanus twelve days after injury. On the next day he received an intracerebral injection of six cubic centimeters of concentrated serum, then twenty cubic centimeters subcutaneously. He left the hospital on the twenty-second day following operation.

The fourth case developed tetanus without previous injury. Five days later he received an intravenous injection, which was twice repeated, until on the eighth day the intracerebral injection of six cubic centimeters of concentrated serum was given. This patient recovered.

The fifth patient developed tetanus thirteen days after injury. The following day seven cubic centimeters of the concentrated serum was injected intracerebrally. The next day the patient died, two days after the first appearance of symptoms and fifteen days after operation.

The sixth case developed symptoms nine

days after an injury, and was injected six days later. He recovered.

The seventh case, an eighteen-year-old boy working in a stable, exhibited numerous skin abrasions. Was operated on the day after tetanus developed. He died forty-one hours after operation, and eighty-one hours after the appearance of the first symptom.

The eighth case developed symptoms six days after a compound fracture of the right forearm. Two days later he was subjected to intracerebral injection, and died thirteen hours after operation, and about seventy-two hours after first appearance of symptoms.

The ninth case developed symptoms six days after a compound fracture of the radius. The following day an intracerebral injection of six cubic centimeters of concentrated serum was practiced, and twenty cubic centimeters of ordinary serum subcutaneously. The patient died the same day.

All these cases are taken from French journals. The autopsies show that the cerebral lesions caused by the injections were trifling.

The tenth case developed tetanic symptoms eight days after having stepped on a nail. The cicatrix of the wound was excised, lumbar puncture was made, and ten cubic centimeters of serum was injected under the arachnoid, but without success.

Two more cases were reported by Lucas-Championniére following laparotomy. These were treated after the new method, but without success, though intracerebral injection was made within twenty-four hours after the onset of symptoms.

Rambaud reports a case occurring in the practice of Robinson, in which tetanus appeared ten days after a laparotomy, the subcutaneous injection proving powerless; six cubic centimeters of slightly concentrated serum was injected into the cerebrum on the third day of the disease. This patient recovered from the tetanus, but died eleven days later of other causes.

Rambaud also cites a case occurring in the practice of Dr. Johnson. Tetanus developed seven days after the patient had cut off the end of his left thumb, while chopping wood. Two days later intracerebral injections were practiced. The patient died twelve hours after operation, and about sixty-five hours after the onset of the symptoms.

Church reports in full a case of a man who developed tetanus twelve days after suffering from an incised wound of the leg. Four days later the intracerebral injections were practiced. In addition, because of the suppurating wound of the leg, twenty-five cubic centimeters of antitetanic serum was injected into the veins. The following day several subcutaneous serum injections were made. The patient recovered.

## Reviews.

System of Practical Medicine. By American Authors. Edited by Alfred Lee Loomis, M.D., Late Professor of Pathology and Practical Medicine in the New York University, and William Gilman Thompson, M.D., Professor of Medicine in the New York University. Volume IV: Diseases of the Nervous System and Mind, Vasomotor and Trophic Disorders, Diseases of the Muscles, Osteomalacia, Rachitis, Rheumatism, Arthritis, Gout, Lithæmia, Obesity, Scurvy, Addison's Disease.

Philadelphia and New York: Lea Brothers & Co., 1898.

This volume is the fourth and last of the series comprising the System, and in general maintains the high standard of the previous volumes. To this statement, however, some exceptions may be taken, as it appears to us the subjects have not been assigned with the careful discrimination characterizing the volumes we have already reviewed. Indeed, in several instances the contributors can hardly be considered as entitled to speak with such authority upon the subjects they have presented as we have a right to expect in a work of this character.

Again, the reading of the proof does not appear to have been done with sufficient care to exclude a number of typographical errors. Thus, on page 978, the last word of the third line counting from the bottom of the page is evidently intended to be "private;" and on page 973 the cause of gonorrheal arthritis is said to be the gonococcus of "Neissen," instead of Neisser.

With the exception of some 170 pages dealing with a group of miscellaneous subjects the volume, which contains 1082 pages in all, is devoted to diseases pertaining to the nervous system. It needs but a glance at the list of contributors to this portion of the volume to be assured that the sections written by Dana, Dercum, Finley, Gray, Mills, Putnam, Sinkler, and some others may be confidently turned to for an authoritative statement of facts. As above suggested, however, there are a number of contributors whose names hardly deserve to be associated with those just quoted. This lack of evenness, however, is a fault of most Systems—we might almost say *the* fault—but we are

disappointed to find it so accentuated in the volume under consideration, as in reviewing the previous volumes we took pleasure in commenting on its existence to a minimum extent. It is doubtless the keenness of this disappointment that has caused us to make, even in this general way, an unfavorable comment upon this volume, and we would not be understood as seriously detracting from the merit of the book, which in the main is of the highest possible order. Indeed, taken as a whole we consider this System to be the best of those presented to the profession in recent years.

In the volume under present consideration the section devoted to disorders of the mind —contributed by Pritchard, Ford, Noyes, Gray, Pearce Bailey, and Prince—is especially worthy of mention for the very satisfactory manner in which the various subjects are treated. The section is of decided value and has a distinct place in Systems of this character.

To the section devoted to miscellaneous subjects, the addition of which renders the volume more than ordinarily bulky, one of the editors (Thompson) figures as the principal contributor. He is responsible for very thorough and valuable articles upon Rheumatism, Gonorrhœal Arthritis, Arthritis Deformans, Gout, Lithæmia, and Obesity.

To praise too highly the general character of this System would be difficult, and the editors are to be congratulated upon producing a contribution to medical literature that has doubtless already met with the material appreciation that is its due.

T. G. A.

A Pocket Medical Formulary with Appendix. By W. M. Powell, M.D. Fifth Edition, Thoroughly Revised.
Philadelphia: W. B. Saunders, 1899.

This formulary, about the size of a large visiting list, has a thumb letter index and contains a large number of prescriptions which have been recommended by various practitioners, more or less eminent, for the various diseases under which the prescriptions are grouped.

After the preface there is given a list of the authorities which are quoted, and the name of the authority follows each prescription. The volume closes with a dose table, with a list of incompatibles, of measures, of drugs to be given by atomization, differential tables of the eruptive fevers, and a "surgical remembrancer," which is perhaps the most useful thing in its pages. A diet list and a table for calculating the periods of gestation complete the volume, which, as it has reached the fifth edition in seven years, evidently has proved popular with the profession.

A Manual of Physiology with Practical Exercises. By G. N. Stewart, M.A., D.Sc., M.D. Third Edition, Fully Illustrated.
Philadelphia: W. B. Saunders, 1898.

Books, like men, take the place of one another as time goes on, and this volume seems to have succeeded in preempting a large amount of the ground heretofore held by the smaller books on Physiology, as for example that of Yeo and Morrant Baker. If it has done so it has accomplished its task by reason of its valuable qualities, for the book as it stands to-day is perhaps the best manual of modern physiology in the English language.

A very great advantage which it possesses, over and above the fact that it is complete and accurate, is the easy style in which it is written, which makes its reading more interesting than if it were simply a mass of rudely stated facts. The rapid exhaustion of early editions has permitted Dr. Stewart to revise the book frequently and to keep it thoroughly up to the mark. Beside the general text, it also contains information which makes it useful for laboratory experimentation on the part of students.

A Syllabus of Materia Medica. Compiled by Warren Coleman, M.D.
New York: William Wood & Co., 1899.

This little book of 169 pages has been designed by its compiler to supply students with brief information as to the official names, official preparations, doses, and uses of drugs. Taking the drug "ether," for example, its official name is given, official preparations which are made from it are then named, its action is then defined in single terms, and its uses follow. Finally, seven points regarding caution in its use are mentioned, and all this is contained within a space of about two inches of text. As a rule we have not regarded with favor these condensed memorizing manuals, but we shall take pleasure in recommending to our first-year students the immediate purchase of this valuable little guide.

Acromegaly. By Guy Hinsdale, M.D.
Detroit, Mich.: William M. Warren, 1898.

This valuable essay, which was awarded the Boylston prize of Harvard University for 1898, was in part printed in the well known journal *Medicine*, edited by Dr. Moyer, of

Chicago, and is now reprinted in a large octavo volume of less than 100 pages. As may be imagined from the fact that it won this notable prize, it is a valuable and complete summary of our knowledge of this curious disease, which has been recognized but for a few years. Much of the essay dealing with references to reported cases could not be included owing to the difficulty of printing, but as it stands to-day it is a classical summary of our knowledge concerning the malady.

THE PHONENDOSCOPE AND ITS PRACTICAL APPLICATION. By Aurelio Bianchi, M.D., of Parma. Copiously Illustrated. Translated by A. G. Baker, M.D. Philadelphia: George P. Pilling & Sons, 1898.

As may be imagined from the title of this small brochure, it is intended to exploit the advantages of the use of the phonendoscope, and, as is well known, it is claimed that by its use the physician is enabled to outline organs by means of auscultatory percussion and recognize sounds which otherwise would escape his ear. Most physicians have already tried this instrument, and have found that while it is of value in some cases it does not fulfil all the indications which it was hoped it would when it was first introduced, although of course it is a valuable aid to diagnosis.

A TREATISE ON DISEASES OF THE EAR. Together with a Brief Sketch of the Anatomy and Physiology of the Organ. By Albert H. Buck, M.D. Third Revised Edition. 8vo; pp. 592.
New York: William Wood & Company, 1898.

This revised edition of Buck's well known text-book covers the modern field of otology even more fully and satisfactorily than did its predecessors in the somewhat restricted list of diseases with which it had to deal. As an entirely new departure may be mentioned the inclusion of the complications incident to infections of the ear. These Buck has classed without hesitation as belonging to the otologist; and has contributed chapters upon Diseases of the Mastoid Process and Neighboring Structures, upon Periphlebitis and Infective Thrombosis of the Sigmoid Sinus, upon Meningitis, Extradural Abscess, and Abscess of the Brain, which might well serve as models for the writers of surgical encyclopedias.

This work is illustrated by many cases, a method of teaching which does not always accomplish its intended result, and one which in the main should be omitted in books designed to cover an entire subject.

The arrangement of the diseases dealt with, the clearness and directness of the writing, and the rational simplicity of the treatment, are all worthy of high praise, and are important factors in maintaining this work in its position as first of those devoted exclusively to diseases of the ear.

THE SEXUAL INSTINCT. Its Use and Dangers as Affecting Heredity and Morals. By James Foster Scott, B.A. (Yale University), M.D., C.M. (Edinburgh University). 8vo; pp. 436.
New York: E. B. Treat & Company, 1899.

Since the author states that this work is designed to furnish non-professional men with a sufficiently thorough knowledge of matters pertaining to the sexual sphere, medical criticism of it is, perhaps, out of place. It is, however, pleasing to learn that the knowledge which he possesses of this subject has, according to his own statement, been acquired through legitimate channels, and that he has discussed the subject-matter with men of science, doctors, ministers, lawyers, and men about town; also some of it prudently with women.

It would be most unfair to think that the author has made this compilation with any but the best motives. Much of the subject-matter, however, should not appear in a book intended for the laity. Some of the statements made are open to serious criticism.

The book is not sufficiently detailed to gratify the prurient, nor is it so scholarly and accurate that the scientific may learn therefrom. Therefore, to medical men, it is of little use.

ON THE ORIGIN AND PROGRESS OF RENAL SURGERY. With Special Reference to Stone in the Kidney and Ureter, and to the Surgical Treatment of Calculous Anuria. Being the Hunterian Lectures for 1898. Together with a Critical Examination of Subparietal Injuries of the Ureter. By Henry Morris, M.A., M.B. Lond., F.R.C.S. 8vo; pp. 288.
Philadelphia: P. Blakiston's Son & Co., 1898.

This work is not intended as a text-book on renal surgery, but includes three Hunterian lectures: the first devoted to the original progress of renal surgery and the conservative tendency of its recent development; the other two to renal calculi and injuries of the ureter. There is appended a table of cases operated upon, and a final series of cases of calculous anuria.

In his first lecture the author calls attention to the fact that he was the pioneer in the operative treatment of renal lithiasis, having successfully removed in 1880 a mulberry calculus from the undistended, and to the naked eye quite normal, kidney of a young woman. The kidney was exposed

through the oblique lumbar incision, and the stone reached and removed through the renal parenchyma.

In considering the methods of restoring the continuity of the ureter after its complete division, Morris gives preference to that of Van Hook. He states that renal calculous disorders are the most frequent and the most painful of surgical diseases of the kidney. Nephrotomy is one of the most successful and one of the safest of major operations, and cures absolutely, saving the kidney from an otherwise inevitable progressive destruction, and the patient from what at any moment may prove to be imminent danger to life.

The pages devoted to Symptomatology are most important and interesting.

These lectures, representing as they do the results of careful observation of a great number of cases, form a contribution of more than passing interest to the current literature of renal surgery. They are destined to make early diagnosis more certain and to popularize conservative operations, having for their end, and performed in time, restoration to complete health from usually a condition of intolerable suffering.

No writer upon these subjects can carry greater personal weight than does Morris.

## Correspondence.

### *LONDON LETTER.*

By Raymond Crawfurd, M.A., M.D. Oxon., M.R.C.P. Lond.

During the past month death has been busy in the ranks of the profession. First and foremost we have to mourn Sir William Jenner; though at the advanced age of eighty-three, he had in the nature of things for some years lived in retirement from active medical work. His contributions to medical science and literature were not numerous, but all of first-rate importance. Perhaps the best known is his essay establishing the distinction between typhoid and typhus fever, published fifty years ago. It is true he was not absolutely the pioneer of this fact of clinical knowledge, but his paper, based on a minute clinical and pathological study of sixty-six fatal cases, first established the distinction beyond question. His point of departure was the difference in the post-mortem appearances of the bowel, and with this he associated differences in the clinical features of the disease. His only other important work was the Clinical Lectures and Essays on Rickets, Tuberculosis, Abdominal Tumors, and other Subjects. To his observations of rickets the most modern medicine has but little to add. Sir William Jenner was the trusted court physician of Queen Victoria for upwards of thirty years, and held also the blue ribbon of the profession in Great Britain as President of the College of Physicians.

Two other octogenarians have also gone to their rest: Dr. C. J. Hare, a much esteemed physician of the past generation, and Dr. William Munk, Librarian of the College of Physicians, who, outside the sphere of medicine, made several graceful contributions to literature. Better known to Americans will be the name of Professor Kanthack, who has just died at the early age of thirty-five. He leaves behind him a memorial of colossal industry that would have done honor to a man of twice his years.

Medical science has this week been the favored recipient of a princely gift of £250,000 from Lord Iveagh. The sum is to be handed over to the Jenner Institute of Preventive Medicine. This institute is the quondam British Institute of Preventive Medicine, and is the new name it has assumed on acquiring the funds of the Jenner Memorial Committee. In its new home on the Chelsea Embankment the institute should be a national home for bacteriological investigation. Lord Iveagh deserves the thanks of the nation for wiping away a standing reproach against the wealthiest nation in the world for neglecting to make adequate provision for scientific research. It is to be hoped that we may no longer have to cast our eyes oversea for the pioneers of scientific medicine.

Another handsome gift of £20,000 has been placed to the funds of the National Association for the Prevention of Consumption and other forms of Tuberculosis by Messrs. Wernher, Beit & Co., of South African notoriety, for building and endowing a sanatorium for patients of limited means. The Association is thriving steadily under the royal patronage conceded to it.

The School of Tropical Medicine is undergoing the baptism of fire, if we may thus symbolize the rancor of professional jealousy. The difficulty that has arisen is this: The Colonial Secretary very properly was anxious to establish a center for the study of tropical diseases; the natural home for such a

school should have been the Dreadnaught Hospital of the Seamen's Society at Greenwich, which has a Branch Hospital of Ease at the Albert and Victoria Docks in East London. The function of this branch is to receive patients on their arrival by sea, and to feed the Greenwich Hospital. Herein is the *casus belli:* Dr. Patrick Manson is adviser to the Colonial Office, and therefore has the ear of the Colonial Secretary, and was also recently appointed physician to the Branch Hospital. Leaving out of count the personal issues of the dispute, the grievance is that the Branch Hospital has latterly evinced a voracious appetite for tropical diseases, and has supplied the mother hospital with an innutritious diet of purely chronic cases of non-tropical maladies; and now the starvation process is to receive official recognition by the establishment of a School of Tropical Medicine in connection with the Branch Hospital. One point is quite clear, namely, that such a school is an imperative necessity; but we do not feel disposed to adjudicate on the question of the preferable site.

At the Edinburgh Medico-Chirurgical Society Dr. Lovell Gulland read notes of a case of chronic sulphonal poisoning, in which thirty grains of sulphonal had been taken every night for about six weeks. About a week prior to his death he developed ataxia of all the limbs, lassitude and drowsiness, and then hematoporphyruria. Post-mortem little was to be seen but fatty degeneration of the heart and general stasis in all the organs. Under the microscope could be made out necrosis of the secreting epithelium of the kidney, and early degenerative changes in the liver and suprarenal capsules. Dr. Gulland insisted on the presence of the renal changes in both the acute and chronic forms of sulphonal poisoning, and ascribed the fatal issue quite as much to these as to the toxic action of the drug upon the blood. In treating cases of acute poisoning the objects to bear in mind were: (1) to remove as much as possible of the insoluble drug from the alimentary tract; and (2) to promote free diuresis; whilst in the chronic form the free use of alkalies was indicated. Dr. Gulland urged that sulphonal should not be given in all cases, especially those where there was constipation, great prostration, or kidney disease. Gulland's observations corroborate those of Stern on the changes in the renal epithelium, with the exception that he found no hemorrhagic extravasations. The alleged hemolytic action of sulphonal rests on very insufficient evidence. The moral of Gulland's case seems to be that sulphonal should be regarded as a cumulative poison, and not as a hypnotic agent that can be safely left to the discretion of the patient. Its comparative insolubility tends to make cases of acute poisoning comparatively rare, while chronic poisoning is not infrequent. For this same reason cases of acute poisoning respond more readily to treatment. We have ourselves seen 120 grains inadvertently taken in a single dose by a patient suffering from alcoholic delirium; the only effect was restoration of the healthy mental condition in the course of twelve hours without any toxic effects. Cases of chronic poisoning would undoubtedly be far less common if the bowels were kept well open during administration of the drug; and in this same way the annoying drowsiness that so often persists through the following day might in part also be avoided.

Dr. Ramsay notes a case of serous catarrh of the middle ear produced by the administration of iodide of potassium. The iodide was administered in doses of three grains three times a day, and the symptoms came on suddenly after three days. There were the familiar signs of iodism in discharges from the eyes and nose, but so far as our experience goes catarrh of the middle ear would seem to be a very rare result. Another interesting observation in the same case is that the same dose of sodium iodide was well tolerated, and as is usual in these cases a considerable increase of the dose of the potassium salt also led to subsidence of the symptoms of iodism.

Among minor ailments one of considerable interest has just come under our own notice. We were called to see a young lady, who complained of violent pain in the neck, radiating to the ears and temples; the only other symptom communicated by the patient was dysphagia. Examination of the larynx showed it to be absolutely normal, and there was no reason to suspect disease or injury of the esophagus, as the dysphagia was as great when performing the movement of swallowing as when actually swallowing food. This led us to suspect the thyroid gland, and there was some confirmation of this idea in the fact that menstrual disturbances were prominent. The patient had already exhausted the list of domestic remedies, and we found on inquiry that heat instead of relieving the pain had merely served to intensify it, and induce throbbing in the neck.

There was no visible swelling of the thyroid. Believing that we had to deal with some rapid enlargement of the thyroid, either due to congestion or hypersecretion, we ordered cold applications to the front of the neck, and a mixture of belladonna and sulphate of magnesia. The relief was almost instantaneous. We are aware that the causation of the symptoms is open to question, but this will be much allayed by the information that we have since elicited that another sister of the patient suffered from the same symptoms and had an actual transitory goitre under very much the same circumstances of health. This fact was quite unknown to the patient. The condition would thus be analogous to the acute pain over the lung in some cases of active pneumonia in the absence of pleurisy, and the severe splenic pain in many cases of enlarged spleen—particularly leucocythemia—in the absence of perisplenitis. How rapidly ice poultices will relieve the former condition is of course familiar, but we fancy that the same treatment has not been often adopted for the latter condition. We have tried it in two cases of rapid splenic enlargement from leucocythemia with marked benefit after all other remedies had been attempted. If to this category we may refer the case we have narrated, we have another instance of severe pain due to rapid expansion of the capsular investment of an organ. It seemed worth while to record even so slight a triumph of rational therapeutics, as the relief of even a small pain on rational lines is a substantial addition to the stock in trade of medicine.

At the Royal Medical and Chirurgical Society Messrs. Hutchinson and Barnard brought forward a communication on an improved method of treatment of separation of the lower epiphysis of the femur. They showed by means of skiagrams that it was easy to obtain reduction and also to maintain it by full flexion of the knee so that the heel touches the buttock. There is no difficulty in getting the patient to tolerate the position, and after ten days or a fortnight the limb can be put on a Macintyre splint and subsequently gradually straightened. The accident almost invariably occurs when the knee is hyperextended, so that the epiphysis is drawn forward and the diaphysis projects backward into the popliteal space; at the same time some rotation or twisting of the leg, and corresponding projection of the diaphysial end, is not infrequent. All these points were illustrated by skiagrams, as also a remarkable production of new bone in a comparatively normal manner even when some displacement persisted. This method of full flexion would remove the necessity of forcible efforts at reduction, which of all things were most calculated to damage the epiphysial disk.

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## *PARIS LETTER.*

By A. R. Turner, M.D. (Paris).

Dr. Fournier, professor at the Faculty of Medicine, and physician of the St. Louis Hospital, who is so well known on account of his works on syphilis, gave a lecture recently on the preventive treatment during gestation of hereditary syphilis. The speaker began by saying that he would follow out his usual habit of commencing his course of lectures by examining a question concerning more specially the conduct to be followed by a physician in his practice.

Dr. Fournier examined the following case: A woman is pregnant and her husband syphilitic. Should any treatment be instituted to prevent any syphilitic heredity? Of course, the physician need not hesitate when the woman is already infected with syphilis, but what should be examined is a case where there are no signs of infection. The woman may be pregnant for the first time, nothing can indicate whether she will have a healthy child, and the husband, weighed down by his approaching paternity, and remembering the sins of his youth, asks whether anything can be done to prevent any unfortunate results of his former syphilis.

Much more frequently the case is quite different. The woman has already had two or three miscarriages, or a previous child may have been affected with hydrocephalus.

A treatment should be instituted in such cases; and such conduct is quite rational, as we have learned from Dr. Porak's works on the subject how quickly drugs administered to the mother pass into the child's circulation. Dr. Pinard, the well known accoucheur, once told Dr. Fournier that he had yet to find a case in which a woman had been injured by taking this treatment.

Another thing to be considered is whether this treatment is useful for the child. On this point there can be no discussion. If it is the first gestation, the child is born under good conditions, generally speaking; if there have been a number of miscarriages there is a likelihood that there will be no recurrence

of this. Dr. Fournier cited several examples of this fact, of which the following is an instance: A young man was treated for syphilis and was married two years later. A first child died of congenital debility, a second one suffered from an eruption of syphilides on the fifth week after birth and died. The father consulted Dr. Fournier after this, with his wife, who showed no signs of syphilitic infection, and was just beginning a third pregnancy. A syphilitic treatment of protoiodide of mercury and iodide of potassium alternately was given, and the result was a normal parturition.

Dr. Fournier said that it could be given as a safe rule that when a woman was with child, and this child is in danger on account of the syphilitic taint of the father, a specific treatment of the mother, though she be healthy, is a safeguard of great importance for the child, and should be applied in all such cases.

From what has just been said it should not be thought that an energetic treatment should be followed whenever the father has had syphilis. The physician must decide according to circumstances. There is a great difference between, for instance, a man who contracted syphilis six or seven years ago, who has followed a good treatment and has shown no symptoms since, and a man who has been recently infected, has followed no treatment, and whose wife has had several miscarriages. Between these two extreme limits there is an open field for a variety of cases, and the physician will be called upon to exercise all his sagacity in deciding what is the best course to be followed. In a general way it is better to be cautious and administer drugs where there is some doubt. Once this question is settled, an obstacle presents itself immediately. Is the woman to know for what she is being treated? If the husband has already confessed to her, or intends doing so, the way is plain, but otherwise a physician will be called upon to exercise all his ingenuity to prevent her from learning the reason of the treatment followed. Here the spectre of the *belle-mère* mother-in-law, so potent in France, is called up. She will want to know why her daughter is obliged to take a lot of pills when she is to have a child, and will remark that, when she had children, no such means were found necessary. Dr. Fournier spoke of a case in point, where he had been called in by Professor Tarnier, and where the mother-in-law had been solemnly assured there was no mercury in those pills. One day this lady came to him in a fine state of rage, and said to him: "I have had your pills examined by my druggist, and they are full of mercury." This, Dr. Fournier added, should in no wise prevent a physician doing what is best for his patient.

A last point remains to be examined, and that regards the method of treatment. The intervention should be sufficiently rapid—that is, begun in the first period of pregnancy. After the fifth month Dr. Pinard says there is not much hope of producing a good result. Mercury should be used, as being much more active as a preventive, and as an eradicator of any hereditary influence. Moreover, it is much more easily taken than iodides, which so many women cannot tolerate. Protoiodide of mercury is therefore the best preparation and should be given in doses of 0.025 to 0.05 gramme daily. This dose should be taken for twenty days, then a rest of ten days, and so on during the continuance of pregnancy.

The use of guaiacol in the treatment of erysipelas has been tried on adults, but this method has not until recently been employed for children. Dr. Villa, of Genoa, has found it useful in three cases of erysipelas. In his first case the infant, only ten days old, was suffering from umbilical erysipelas, extending from the thorax to the pubis. The temperature was high. The child was given a hot boracic acid bath, and the physician applied all over the affected part and two centimeters further a twenty-per-cent solution of guaiacol in oil, and covered this with a piece of oiled silk. Half an hour afterwards the temperature had gone down from 39.8° to 38.4° C., with abundant perspiration. The next morning the temperature was only 37.5° C., though the area affected had slightly increased in size, notwithstanding a slight change for the better in the color of the skin. The temperature having gone up again in the afternoon to 40° C., a second application was made, and this was done for six days, alternating with the use of balsam of Peru, used to prevent irritation of the skin. Recovery was complete twelve days after the beginning of the affection. In two other cases solutions of thirty or forty per cent were used and proved highly successful. Dr. Villa did not remark any untoward effects from the use of guaiacol.

The 25th of December is the date chosen in Paris for the changing of the services held by the various surgeons and physicians, and at the Beaujon Hospital, for instance, Dr. Anger retired and was replaced by Dr. Bazy,

who has done some work on urinary diseases. Dr. Lucas-Championniere, the great advocate of massage, was called to the Hôtel-Dieu, and Dr. Rigal was replaced by Dr. Lacombe. Dr. Th. Anger, who is specially known for an excellent work he published on cancer of the tongue, was offered a sort of farewell reception in the amphitheater of the hospital, which was garnished with palms and flowers for this occasion. Dr. Tuffier, surgeon of the hospitals, delivered an address, in which he spoke at length of Dr. Anger's work and of the affection his pupils had for him. Then the *surveillante*, or head nurse, delivered a short speech in behalf of the attendants in the wards, and then the *clou* of the whole ceremony. Dr. Ledentu, surgeon at the Neckar Hospital, arose and spoke of the long friendship which had existed between him and Dr. Anger, dating back to the time when they were working together as house surgeons. His speech was most interesting, and towards the end his emotion got the best of him and he embraced Dr. Anger, which sounds very French perhaps to some of my readers, but which was truly touching and not without its own dignity. Dr. Anger answered by a few words, which were listened to with the greatest attention. He said that in his career he had tried to follow out this precept of doing what one could without attracting too much attention, and he prided himself upon always having had good house surgeons to help him in his work; and he ended by describing the death scene of his master, Nélaton the elder, the surgeon of Napoleon III. Nélaton was suffering from Bright's disease and had had himself placed on a mattress on the floor. He told Dr. Anger to bend over him, and when he was near enough for him to hear what he had to say, he whispered: "Remember, do not much make noise, do good" ("*Ne faites pas de bruit, faites du bien*").

At a meeting held by the Society of Surgery of Paris Dr. Quenu spoke of a case of pseudarthrosis where thyroidin was used with good results. The patient was a woman twenty-four years old, who sustained a supracondylian fracture of the femur, with piercing of the skin by a fragment and consequent infection. After three months the fracture was not yet consolidated. Mr. Duval, Dr. Quenu's house surgeon, gave her thyroidin, and after five days' treatment she was able to walk with a silicate splint, and she is now quite recovered.

In another case a patient had been operated for exophthalmic goitre, and surgical myxedema had necessitated the use of thyroidin. This patient had later a bimalleolar fracture, and by using thyroidin recovery seemed to be hastened.

Dr. Reclus cited a similar case where thyroidin had proved most successful in a case of pseudarthrosis. On the other hand, in two other cases thyroidin proved of no avail.

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### *RIGHT INGUINAL HERNIA.*

To the Editor of the THERAPEUTIC GAZETTE.

SIR: I desire to report the following case, which very recently occurred in my practice:

On November 25 the patient, a woman aged about thirty-five years, called at my office stating that she was suffering from a hernia which had existed for a number of years, but which she had always been able to reduce until about a week previously, when it "came down," and in spite of all her efforts could not be replaced. Examination disclosed in the right inguinal region a mass slightly larger than a walnut, which was dull on percussion, and pressure on which elicited pain.

An attempt was made to reduce by taxis, but without success. Patient was then sent to her home and told to make hot applications over the tumor until the following day, when under chloroform another attempt was made to reduce by taxis, but this also failed. Believing the mass to be omentum, and no signs of strangulation being present, patient was advised to remain quiet for a few days, meanwhile continuing the hot applications as before.

She was next seen by me on December 5, when the mass had become less tender and seemed to be somewhat reduced in size. Taxis without anesthesia was again tried without result. A spray of ethyl chloride was next applied over the mass until the superficial tissues were frozen. The patient was then placed in the inverted posture and told to take two or three deep inspirations. Upon replacing her on the bed it was found that the mass had been partially reduced, and very slight manipulation caused it entirely to disappear.

While this case does not, of course, prove the superiority of any particular method, it does serve to emphasize the fact that a hernia that cannot be reduced under anesthesia will sometimes yield to simpler means.

G, H. B. TERRY, M.D.

WYALUSING, PA., Dec. 8, 1898.